

# *The* CAVALRY JOURNAL

---

Devoted to the Interests of the Cavalry,  
to the Professional Improvement of Its  
Officers and Men, and to the Advance-  
ment of the Mounted Service Generally

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EDITOR PRO TEM  
Major K. G. EASTHAM, Cavalry

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1. The aim and purpose of the Association shall be to disseminate knowledge of the military art and science, to promote the professional improvement of its members, and to preserve and foster the spirit, the traditions, and the solidarity of the Cavalry of the Army of the United States.

Article III of the Constitution.

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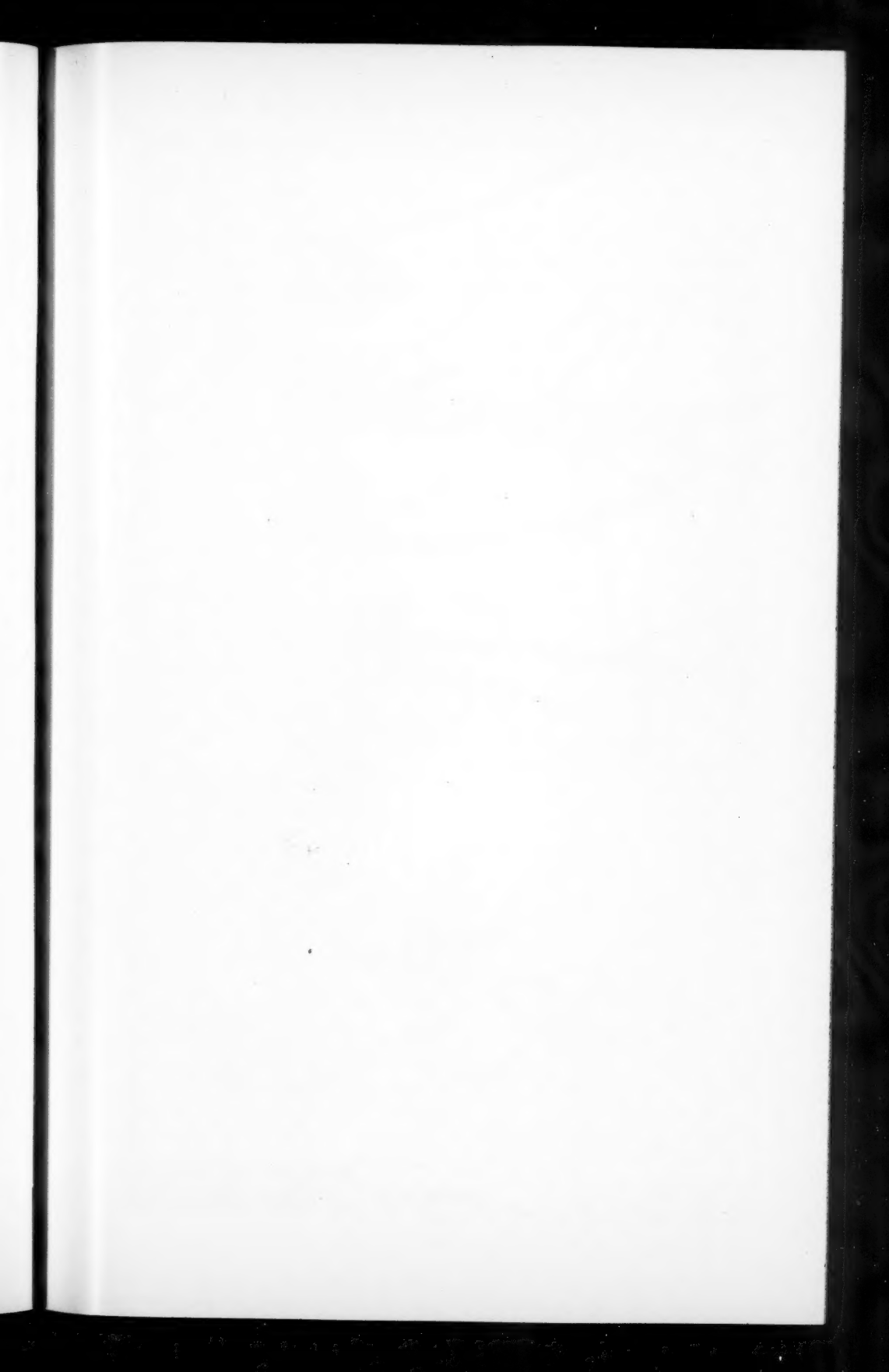
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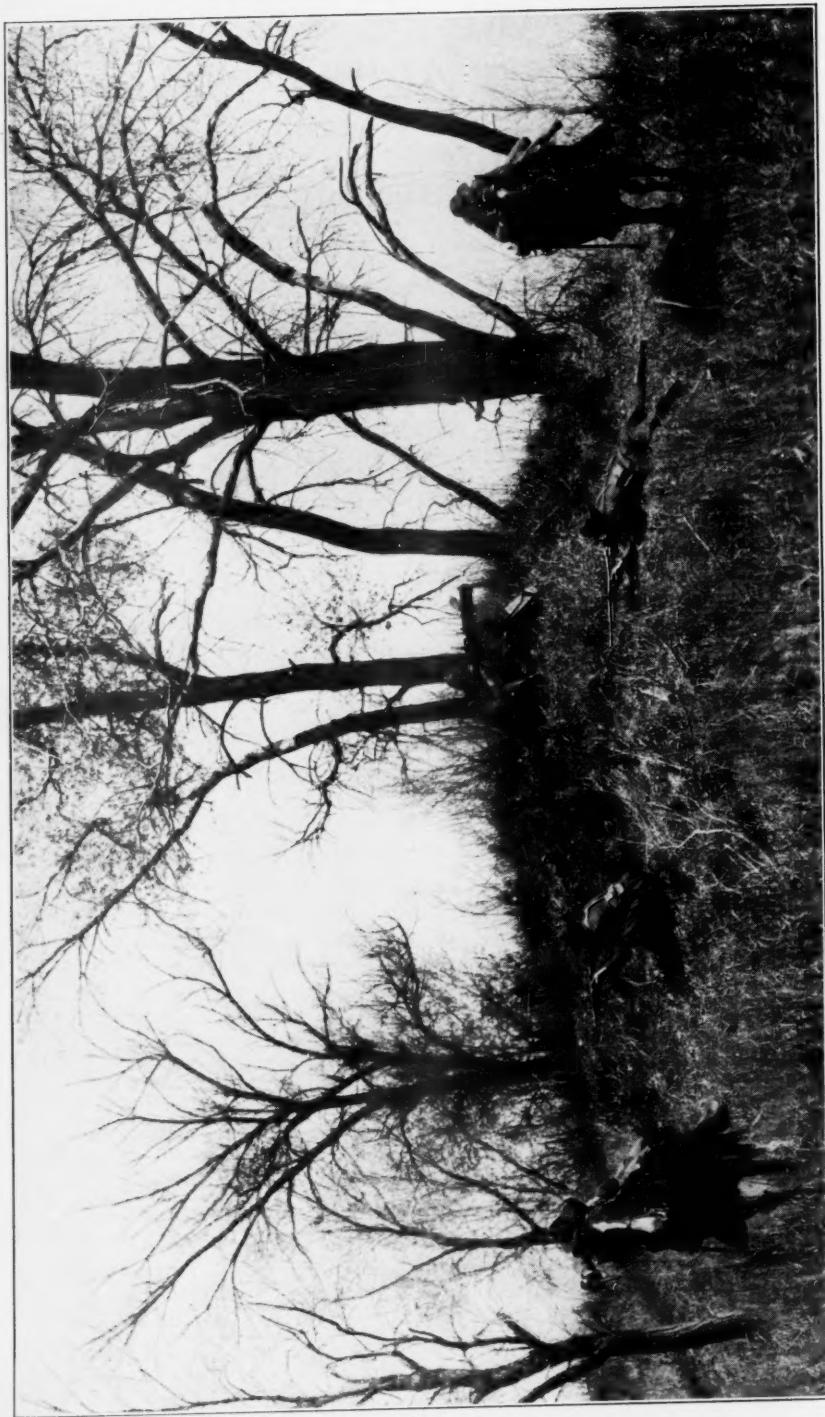
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Cavalry Weapons

# *The* CAVALRY JOURNAL

VOL. XXXVII

JULY, 1928

NO. 152

## Fire Power

By COLONEL AUBREY LIPPINCOTT, *13th Cavalry*

**F**IRE power and mobility, the two most important assets of cavalry, are of their very nature conflicting. This conflict—which is ever present in varying degree, whether in organization, armament, equipment, or even in training—demands our constant consideration in order that we may achieve that nice balance between the two which is so essential to our war time effectiveness.

In the matter of training we are likely to overlook this desired happy medium between mobility and fire power. This oversight is due, no doubt, partly to the multiplicity of cavalry activities, partly to the inroads upon our time and personnel from the perpetual call for post special duty and fatigue details, and partly, too, to our own natural inclinations that allure us towards those activities in which the horse predominates and thus excuse our negligence toward those equally important duties relative to fire power. It is not surprising, then, if cavalymen lean rather heavily towards mounted training and often do just enough of the other kind to get by. This, if carried far, develops faddists, of which we have our share.

If we would train our cavalry in accordance with our doctrine as to its tactical employment, we must carry out the conception that both mobility and fire power are necessary, that one is the complement of the other. To develop fire power cavalry is armed with the rifle, machine rifle, and machine gun. To these an anti-tank gun will soon be added, as well as the weapons to be adopted for the armored car troop and the tank platoon of the cavalry division. Only the first three weapons will be touched upon here.

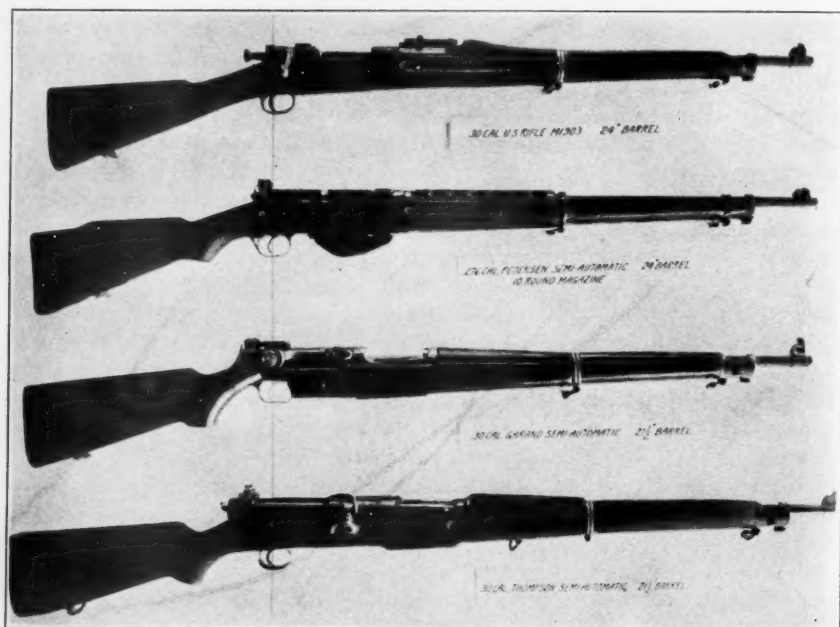
### The Rifle

Everyone is reasonably familiar with this weapon and our men are fairly well trained as individuals in its use, due in some instances, perhaps, to the eighty percent qualification requirement. But what about the collective fire of squads and platoons, the instrumentalities through which fire superiority in battle is to be gained? How much time is given to them? How proficient are they? To direct and control the collective fire of a group of riflemen on a target of low visibility, of uncertain frontage, and at an unknown range, and to combine this fire with movement, all the while taking full advantage of such cover as the ground affords, requires understanding of, and practice

used  
MAR-APR  
53

in the application of principles that are vital even though very elementary. Without proficiency in such subjects as range estimation, target designation, fire distribution, the use of cover, methods of advancing, and the duties of leaders, we cannot hope to gain fire superiority in combat, no matter how excellent our men may be as individual marksmen.

In order that we may make a very cursory test of our memory of these points, five elementary questions are here listed, and after each is indicated the Training Regulations and paragraph where the correct answer will be found. It is suggested that those sufficiently interested mentally answer each question and then check up. This will not take over ten minutes. If some



**Plate I**  
**Various Types of Rifles**

officers find that they have overlooked or forgotten some of these points, it is fair to assume that the noncommissioned officers will know considerably less.

1. Name three methods of target designation. (TR 145-5, Par. 15b.)
2. When designating a target by verbal description, what are the three elements used and in what sequences should they be given? Why? (TR 145-5, Par. 20, a, b, c, d, e.)
3. What methods are generally used to effect fire distribution? (TR 145-5, Par. 30.)
4. Assume that a platoon is engaged as part of a larger force in dismounted combat, and that it is advancing over open ground, not under fire. Make a rough diagram showing the formation of the squads and the positions

of the leader, platoon sergeant, scouts, orderly, corporals, and the seconds in command of squads. What are the duties of these individuals? (TR 425-30, Plate VIII and note on page 39.)\*

5. Assume that the platoon has now reached a firing position. Where are the positions and what are the duties of:

- a. Platoon Leader,
- b. Platoon Sergeant,
- c. Squad Leaders,
- d. Scouts,
- e. Machine Riflemen?

(TR 425-30, Plate X and note on pages 50-51.)\*

These and similar points should be at the finger tips of all squad and platoon leaders and troop commanders, and the corresponding units should be trained in their application. Otherwise, these units are incapable of producing the fire power that we expect of them. A little time devoted to the principles of musketry and some attention to the elements of dismounted combat for the squad and platoon, as outlined in TR 425-25 and TR 425-30,\* with an occasional combat exercise, will go a long way towards putting our training activities in balance.

Before leaving the rifle, a word may be added as to probable future developments. It now seems a certainty that at no very distant time we will be armed with a light self-loading rifle or carbine of somewhat smaller caliber than the Springfield. Then we will have to modify our conceptions as to the rates of fire in battle. This question is one of the important factors in obtaining fire superiority and is worthy of a slight digression. The following discussion is based on a study of the subject made by Colonel W. George McIver several years ago.

In a contest for fire superiority between two forces about equal in numbers, other conditions being equal, the advantage will rest with the side which is able to deliver the greater volume of accurate fire, or, expressed in other words, is able to make the greater number of hits in a unit of time. To illustrate: Suppose two groups "A" and "B," numbering fifty men each, become engaged upon equal terms within effective rifle range. Group "A," for some reason, is able to inflict on "B" a loss of ten percent in one minute's time while "B" inflicts a loss of only five percent on "A." If the fight be maintained on these terms there can be no doubt of the outcome. Continuing the illustration, let us assume that these two groups fire with equal accuracy, thus maintaining the same ratio of hits made to shots fired, and let us further assume that this accuracy is ten percent. But Group "A," through superior skill, fires seven shots per man per minute while "B" fires only five shots per man per minute. Group "A" fires a total of three hundred and fifty shots per minute and the accuracy being ten percent, makes thirty-five hits. Group "B" fires a total of two hundred and fifty shots per minute, and the accuracy being

\*Note—Section III, Principles governing Dismounted Combat, were omitted from the War Department publication of TR 425-30. It is included in the edition printed at and used by the Cavalry School.

the same, makes only twenty-five hits. The importance of the time element becomes evident, for one side, merely through a better utilization of time, all other conditions, including accuracy, being the same, obtains fire superiority. The illustration could be continued further to show that even some slight loss of accuracy is admissible for the sake of the advantage gained in shortening the time in which the loss occurs.

#### Rates of Fire

The rates of fire prescribed for the different ranges in TR 150-10 were based on thorough practical tests, using the Springfield rifle, and were intended to establish standards which could be attained by the average soldier with practice and training with that arm. With the adoption of a self load-

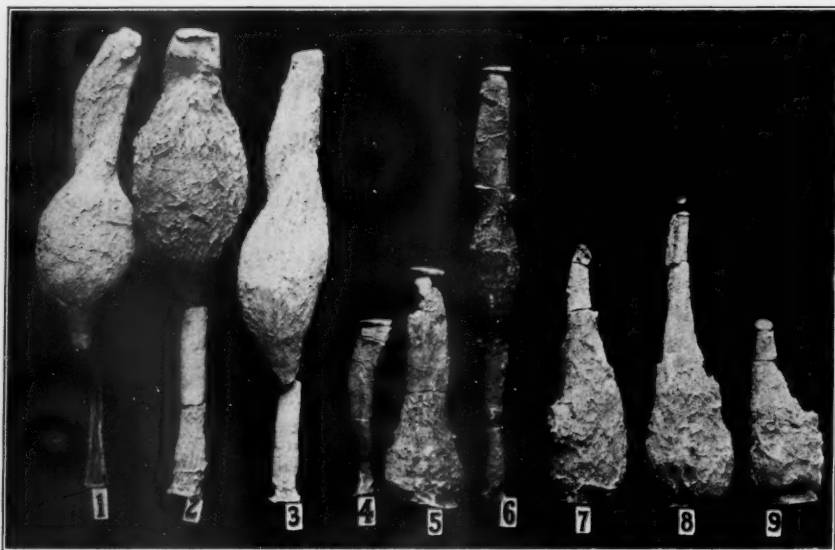


Plate II

#### Casts Made From Cavities Produced in Plastic Clay by Small Arms Projectiles RANGE 600 YARDS

1. Caliber .276 bullet (Pedersen) fired into 15 inches of clay. Weight, 1 lb. 7 ozs.
2. Caliber .30 M1 bullet fired into 15 inches of clay. Weight, 2 lbs. 4½ ozs.
3. Caliber .30 1906 bullet fired into 15 inches of clay. Weight 1 lb. 10 ozs.
4. Caliber .276 bullet (Pedersen) fired through 11 one-inch spruce boards, spaced one inch apart, into 15 inches of clay. Weight, 1½ ozs.
5. Caliber .30 M1 bullet fired through 11 one-inch spruce boards, spaced one inch apart, into 15 inches of clay. Weight 12½ ozs.
6. Caliber .30 1906 bullet fired through 11 one-inch spruce boards, spaced one inch apart, into 15 inches of clay. Weight 12½ ozs.
7. Caliber .276 bullet (Pedersen) fired through a one-eighth inch cold rolled steel plate into 15 inches of clay. Weight 15 ozs.
8. Caliber .30 M1 bullet fired through a one-eighth inch cold rolled steel plate into 15 inches of clay. Weight, 1 lb. 1 oz.
9. Caliber .30 1906 bullet fired through a one-eighth inch cold rolled steel plate into 15 inches of clay. Weight 11 ozs.



ing rifle these rates will, for apparent reasons, require revision. Tests already made have demonstrated that with a rifle of this type a rate of aimed fire twice that possible with the Springfield can easily be maintained, and this without fatigue to the firer. In this connection the following quotation from a recent report of the Cavalry Board is enlightening. "The semi-automatic rifles averaged approximately forty-seven rounds per minute for four minutes, ninety-three percent hits, and .4 malfunctions per hundred rounds. The service rifles averaged seventeen rounds per minute, eighty-nine and thirty-five hundredths percent hits, and 1.4 malfunctions per hundred rounds. The riflemen were so exhausted after firing the Springfield rifles that several minutes' rest was necessary before proceeding with the semi-automatic rifles. No appreciable fatigue was experienced due to the four minutes' firing of the semi-automatic rifles." The recoil of the Pederson rifle is less than half of that of the Springfield.

Some have questioned the advisability of reducing the caliber of our service rifle on the grounds that a smaller bullet may prove ballistically efficient and may not have sufficient stopping power. From actual tests, caliber .276 ammunition, 125 grain bullet, compares as follows with the .30 caliber 1906 ammunition, 150 grain bullet, and the M1 ammunition, 1926, 172 boat tail bullet:

*Remaining Velocities*

Range (Yards)	Cal. .30, M-1906	Cal. 30, M1	Cal. .276, 125 grain bullet
0	2700 ft	2600 ft	2690 ft
1000	989 ft	1202 ft	1211 ft

*Remaining Energies in Foot Pounds*

	2439	2580	2010
0			
1000	376	555	400

Some idea of the comparative shock effects of these three types of bullets can be gained by referring to Plate II.

### The Machine Rifle

This weapon has been a part of our armament but a short time, and in consequence we are not as yet entirely familiar with it. Furthermore, its true capabilities and limitations will be disclosed only after tests extending over a considerable period of time and under varying conditions of service. However, the following characteristics of the weapon are self evident. First, being a shoulder supported arm and having no fixed mount, it is in no sense a machine gun and cannot be used as such. Since it cannot be clamped rigidly in position it should not be used for automatic fire,—that is, fire by bursts,—except possibly at large targets at close range. When fired automatically the dispersion is so great as to be wasteful. Second, it is capable of delivering a very high rate of aimed fire when used semi-automatically, and this rate can be kept up for considerable periods of time without undue heating and

COMPARATIVE FIRE POWER OF OLD AND NEW CAVALRY ORGANIZATION											
HORSES MOBILE (one man per set of four)				(ONE man per squad)				HORSES IMMOBILE (linked by platoon, one man per platoon)			
		PEACE		WAR		PEACE		WAR		PEACE	
		OLD	NEW	OLD	NEW	OLD	NEW	OLD	NEW	OLD	NEW
TROOP	Rifles	26	60	60	104	30	69	69	120	34	75
	M Rs	4	6	6	8	4	6	6	8	4	6
	Total Rifle Power	46	90	90	144	60	89	99	160	54	105
REGIMENT	Rifles	106	240	240	424	180	276	276	480	204	300
	M Rs	24	24	36	48	24	24	36	48	24	24
	M Gs			8	16		8		16		16
	75 MM Guns				3				3		3
	Total Rifle Power	276	560	540	1239	300	596	594	1335	324	620
BRIGADE	Rifles	312	480	720	1248	360	552	828	1440	408	600
	M Rs	48	48	72	96	48	48	72	96	48	48
	M Gs	12	16	18	32	12	16	18	32	12	16
	75 MM Guns				6				6		6
	Total Rifle Power	852	1120	1530	2528	900	1192	1638	2720	948	1240
DIVISION	Rifles	843	1179	1659	2715	939	1323	1875	3099	1036	1419
	M Rs	102	102	150	198	102	102	150	198	102	102
	M Gs	24	110a	36	166c	24	110a	36	166c	24	110c
	75 MM Guns		10		24d		10		24d		10
	300 M Gs		12		36		12		36		12
	Total Rifle Power	1153	1439	2309	3785	1209	1653	2265	3827	1260	1719

Machine rifles rated as equivalent to 5 rifles.

Machine guns rated as equivalent to 25 rifles.

a. Includes rifle platoons only.

b. Includes three engineer companies.

c. Includes armored cars, tanks, and airplanes.

d. Includes tanks.

## HORSES MOBILE

ONE MAN PER SET OF FOURS



OLD PEACE REGIMENT

276



NEW PEACE REGIMENT

560

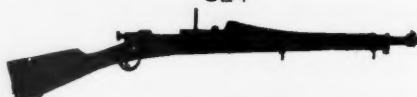
## HORSES IMMOBILE

LINKED BY PLATOON—ONE MAN WITH EACH PLATOON



OLD PEACE REGIMENT

324



NEW PEACE REGIMENT

620



without fatigue to the firer. Third, it weighs approximately twenty-four pounds. It is inaccurate, therefore, to state that it has the same mobility as the rifle, for a man cannot carry twenty-four pounds as fast or as far as he can carry nine pounds. Nevertheless, the mobility of the weapon is high and its flexibility such that its fire can be switched readily from one target to another.

Like practically all automatically operated weapons, however, the machine rifle is subject to occasional stoppages, and contains numerous working parts. Hence, unless the personnel of our machine rifle platoons is thoroughly instructed in the mechanism of the arm as well as in reducing stoppages, meagre results may be expected.

The matter of maintaining efficient machine rifle platoons was a particularly difficult problem in the small troops of our recent organization. The characteristic present day rapid turn over of personnel played such havoc with our small troops that very frequently machine rifle platoons dwindled to squads or actually ceased to exist, except in theory. Under these conditions training naturally suffered. However, with the large troops provided by our new organization, and with our new improved machine rifle qualification course, more thoroughly trained machine rifle platoons should result.

#### **The Machine Gun**

This weapon is now recognized the world over as the most powerful of all small arms. It stands in a class by itself. Notwithstanding this, however, many cavalymen have been reluctant to recognize it as a suitable cavalry weapon. Through contact with many officers passing through the Cavalry School during the past six or seven years the following appear to be the principal reasons for this attitude:

First, misconceptions as to the mobility of machine guns.

Second, lack of familiarity with modern weapons of this type and a belief that these guns are always out of order.

Third, opposition of some old timers to changes or innovations.

Machine guns are just as essential to modern cavalry as they are to modern infantry. By greatly adding to the fire power of cavalry they have increased the battle value of that branch enormously. In fact, every advance made in the development of automatic small arms will add to the value of cavalry.

Now that machine gun troops have been made integral parts of cavalry regiments our officers will become more intimate with the powers of these guns and with the methods of their tactical employment, and it is a safe prediction that admiration for them will increase in direct proportion to experience.

In closing, it may be of interest to compare the fire power of the new cavalry organization with that of the old. This is shown in Plate III.

It is evident that we have the means of producing great fire power if we but use them.

# The Machine Rifle

By LIEUT. COLONEL ALBERT E. PHILLIPS, *Cavalry*

During the World War, Lieutenant Colonel Phillips (then Colonel) was Chief of the Ordnance Machine Gun and Small Arms Field Service under G-4, General Staff, at G.H.Q., A.E.F. He was in charge of field operations of machine guns and small arms.—*The Editor.*

**W**HY the Machine Rifle? Occupying an intermediate position between the rifle and the machine gun it is quite natural that the machine rifle should be the most discussed weapon of cavalry fire armament. A few riflemen believe that a semi-automatic rifle should replace the machine rifle. Some machine gunners, appreciating the full value of the heavy machine gun, believe that a so-called light machine gun may be substituted for the machine rifle.

Weapons are generally devised or invented to fill a definite need or place in tactics. Many new weapons were developed during the World War. Machine rifles, however, were developed prior to this war. Those belligerents who did not have a machine rifle sorely felt the need for a weapon of this type. And queer at it may seem, our own army was one of those which did not use this weapon, although our infantry and cavalry were armed with machine rifles when our first troops landed in France. And conversely, we landed in France without machine guns but used them during the war.

From 1906 to 1909 our infantry and cavalry were equipped with Vickers-Maxum machine guns. From 1909 until 1917, when we entered the war, our troops were equipped with the Benet-Mercie machine rifles, erroneously called machine guns. The Benet-Mercie was a gas-operated machine rifle weighing approximately thirty pounds, could not be used for machine gunnery and was too complicated for the machine rifle functions of our infantry.

## British, French and German Weapons

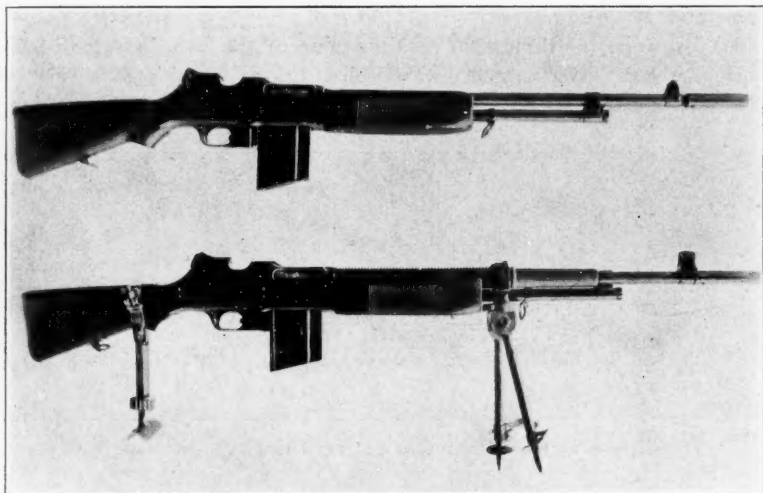
The British cavalry in France was armed with the Benet-Mercie under the name of "Light Hotchkiss." The British infantry, which used machine rifles to full value, was equipped with the Lewis machine rifle, erroneously called machine gun.

The French army did not have a machine rifle nor did it have a satisfactory automatic rifle. This army was equipped with the real Hotchkiss machine gun, a heavier and entirely different weapon from the light Hotchkiss of the British cavalry, and with the Chauchat automatic rifle, devised during the war to counter the effect of the enemy's light machine gun fire. The Hotchkiss was a heavy, gas-operated, air-cooled machine gun. The Chauchat was a very unsatisfactory automatic rifle. The French army suffered heavily by not having a machine rifle or a satisfactory automatic rifle. In many instances the Hotchkiss machine guns were used for machine rifle functions.

As the first units of the American army to land in France were destined to

fight with the French, decision was made to equip these troops with the automatic arms of the French army, consequently, the first twelve American divisions were equipped with Hotchkiss machine guns and Chauchat automatic rifles. Divisions to arrive later were equipped with American thirty caliber Vickers machine guns and Chauchat thirty caliber automatic rifles. The last few divisions to arrive came equipped with both Browning machine guns and automatic rifles; a supply of the Browning automatic arms also arrived in France.

The German army was originally equipped with the German heavy Maxim machine gun in the machine gun companies and, later, the light Maxim machine gun was added as a supplemental arm in rifle companies. As the



Above—The Browning Automatic Rifle  
Below—The Browning Machine Rifle with bipod and stock rest

war progressed there developed a need in the German army (and in other armies) for automatic rifle fire to assist the advance of the infantry "from the front and flanks; to outflank centers of resistance, etc.," and the simplest way to solve this problem during the war, for the German army, was to reduce the size and weight of the heavy machine gun to that of the light machine gun. This was not an ideal solution, but ideal solutions are seldom found in war.

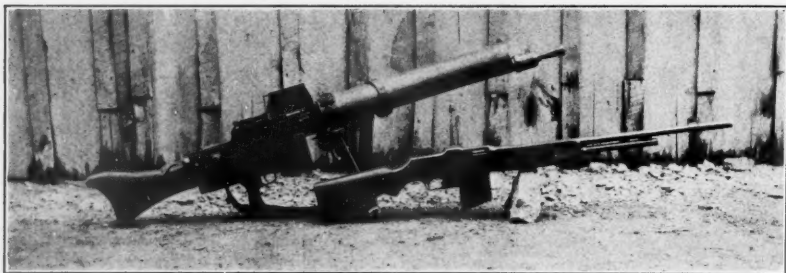
#### Light Machine Guns and Machine Rifles

The German light machine gun is approximately as heavy as our Browning machine gun. In reducing the weight of the German heavy gun to produce the so-called light gun, the water jackets were made smaller and although water was plentiful along the Western front, hundreds of German light machine guns

were found without water (the guns having ceased functioning) and others with urine in place of water.

The light machine gun of our army would most probably be the Browning machine gun, without tripod, but with a bipod under the barrel and a rifle stock, thus simulating the German gun in appearance, bulk, and weight. We need not compare this weapon with the heavy machine gun and tripod mount; our comparison must be made with the machine rifle. The light machine gun has all the inherent difficulties of the heavy machine gun, requiring water, water boxes, belts, belt-filling machines, etc. The weight of the Browning machine gun with water in its jacket is approximately thirty-seven and one-half pounds. A heavy rifle stock and a bipod would add at least six pounds, making a total of forty-three and one-half pounds when converted to a light machine gun.

The Browning machine rifle requires none of the impedimenta listed for the machine gun. The weapon is air-cooled, has a light bipod, a rifle stock and, in addition, it is equipped with a stock rest with mil mechanism for ac-



**The German Light Machine Gun and the Browning Automatic Rifle**

curate delivery of fire. The weight of the Browning machine rifle is twenty-three pounds, fourteen ounces. It will fire from six hundred to eight hundred rounds of continuous automatic fire before ceasing functioning and, after laying it aside for a few minutes, fire may be reopened. But machine rifles, properly handled, will never fire six hundred rounds of continuous automatic fire. With six rifles in war, or four in peace, continuous fire by troop is possible by having each one, in turn, take up the fire. For comparative purposes only, we may state that the Browning automatic rifle with its light barrel will cease firing after approximately one hundred and eighty rounds of continuous fire. The German light machine gun will generate steam after three hundred rounds of continuous fire. The Browning machine gun will generate steam after five hundred rounds of continuous fire. The water-cooled machine gun will cease firing when the water is exhausted.

The one "apparent" advantage of the light machine gun over the machine rifle is, being belt-fed, its fire may be moved along the ground to its target. But this advantage is offset by all the impedimenta required and by a waste

of ammunition if the strike cannot be observed near the target. In the latter event the weapon is at a decided disadvantage when compared to the machine rifle with its accurate measuring mil stock rest.

In the dismounted advance, the "light" machine gun is not easily portable, belts are an encumbrance, water a necessity and steam a hazard. Surely such a gun has no place in the cavalry rifle troop.

#### **The Machine Rifle in Fire Tactics**

Let us disgress a moment to find the place for the machine rifle in fire tactics.

Whether the semi-automatic shoulder rifle will replace the machine rifle in the cavalry rifle troop or not is merely a question of organization. The semi-automatic shoulder rifle cannot replace the machine rifle in fire tactics. The organization and training of the rifle troop would be simplified by not having a machine rifle platoon as an integral part of the troop. And, conversely, machine rifle units would be more efficient were they organized as troops with the machine rifle as the principal arm of the troop. The officers and troopers would then specialize on the weapon. This phase will be discussed later.

The question of armament was thoroughly thrashed out after the armistice by boards of the A. E. F. and the War Department. The writer was a member of the Fiske Board on organization and armament at General Headquarters, A. E. F., and also a member of the War Department on Infantry and Cavalry Armament and Equipment in 1919-1920. The latter board recommended the development of a semi-automatic rifle for the individual soldier—no full automatic fire—the rifle to be clip fed, in place of magazine fed, and recoil operated but capable of being hand-bolt operated should the automatic feature fail. The Browning machine gun was continued for machine gun companies and troops. A big gap then existed between the semi-automatic rifle and the heavy machine gun.

The Browning automatic rifle had come into use during the last few months of the war and its desirable and undesirable features were well understood by the service. This rifle was designed for both full automatic and semi-automatic action. It was light in weight but very inaccurate in automatic fire. In short, it was not capable of sustained fire, could not well be laid upon a definite target and was inaccurate at long ranges. The board contemplated that the proposed semi-automatic shoulder rifle would ultimately replace both the Browning automatic rifle and the Springfield rifle.

How was the gap between the shoulder rifle and the machine gun to be filled? What is this gap in small arms fire? In answering these questions we must again consider the strenuous efforts made by each belligerent in the war to procure a *simple, effective, portable automatic* rifle capable of sustained fire—and this means a machine rifle—to cover the advance of infantry or dismounted cavalry from the front and flanks; to outflank machine gun nests, strong points and centers of resistance; to increase the volume of fire immediately preceding the assault; to hold the key points of captured positions

until advanced machine guns arrive; to follow through during exploitation and to fill gaps between the machine guns during consolidation and in defense. The most successful weapon of the war for this work, and the best use made of the weapon, was the Lewis machine gun (machine rifle) as employed by the British army. But the Lewis machine gun was far from perfect and its magazines were a great encumbrance.

### **Ranges**

The rifle of the soldier is intended for individual fire; as such, it is considered accurate and effective to the full limit of its flat trajectory. Our troops are trained in rifle firing up to six hundred yards, with but little practice and usually poor results beyond that range.

The machine gun with tripod mount is most effective at those ranges where rifle fire is least effective, namely—between eight hundred and fifteen hundred yards. But the machine gun is also effective beyond fifteen hundred yards to the limit range. Machine gun functions are many and varied and this weapon, like all weapons, has its limitations; and one limitation is its weight and necessary impedimenta which relegates it to its proper radius of action.

The machine rifle then, found its true place in war between the soldiers' rifle and the machine gun. In well trained hands the machine rifle is also very effective where rifle fire is least effective, in the eight hundred to fifteen hundred yard gap.

### **Cavalry Need for Machine Rifles**

The next logical question is: Why was the cavalry instead of the infantry, armed with the machine rifle? The infantry had only recently been equipped with the Browning automatic rifle and with the war over, effort was made to cut down every ounce of weight and to await developments. Many experienced infantry machine gun officers advocated the adoption of the machine rifle in place of the Browning automatic rifle.

The cavalry problem was somewhat different. Portability was not a controlling factor, although an important one. Many, if not most, cavalry targets are at long range (this point was stressed by Russian and British cavalry), and reasonable accuracy and rapid measures for hitting all targets are required.

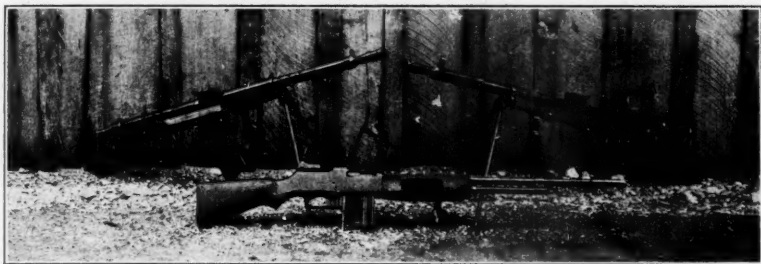
The machine gun had been taken out of the cavalry regiment by the Superior Board A. E. F., and put in the brigade. Fire power approximating that of the machine gun was required for the detached missions of smaller cavalry units. Three machine rifles have the equivalent fire power of one heavy machine gun at machine rifle ranges. Even with machine guns in the regiment there is a distinct field for machine rifles not only in dismounted but also in supporting mounted action. Here then was an opportunity to profit by war experience by arming the cavalry with weapons, the characteristics of which fitted tactical requirements. The semi-automatic rifle for the individual soldier; the machine rifle to fill the gap between the soldier's rifle



and the machine gun for the close and immediate support of rifle troops, with the machine gun (thirty caliber) for its larger functions. Development of a fifty caliber machine gun and a new one pounder were recommended.

Between the Browning machine rifle and the light machine gun, the board had two Browning machine guns which were converted to light machine guns, and chose the machine rifle. The machine rifle is as effective as the light machine gun with none of the disadvantages of the latter weapon.

With the war over, the War Department was not inclined to purchase any new types of weapons—at least until we had a breathing spell. And, as we had used so many types of small arms during the war we were striving for simplification. As the Ordnance-Cavalry member of the board, the writer proposed the development of a machine rifle using the mechanism of the



Right—Chauchat Automatic Rifle, Cal. .30  
Left—Chauchat Automatic Rifle, Cal. .8 m. m.  
Center—Browning Automatic Rifle

Browning automatic rifle, thus simplifying and standardizing parts and supplies.

The principle of gas operation of the Browning rifle was undesirable but there was no other way of obtaining a machine rifle at the time. Gas operated small arms (unless perhaps of the heavy machine gun type which may be cared for in rear positions) have no place in war, and in writing the specifications for the semi-automatic rifle the board specified "recoil operation" or similar principle. The board contemplated that when a semi-automatic rifle was developed and adopted, similar mechanism, though some parts might be heavier, would be used for a new machine rifle.

#### Expert Gunners Required

The great fire power of machine guns and machine rifles is wasted unless an expert fires these weapons. This expert must be qualified in all the mechanical methods of fire—to get out of the gun all there is in it—and to quickly apply this fire to the target. If we accept the statement that most targets for cavalry are moving, then the machine gun and the machine rifle are the ideal weapons for such targets. The fire of either of these weapons may be placed on the target almost instantly.

The most important data required in rifle firing is the "Range to the target." The machine rifle with stock-rest in mils is an ideal weapon for ranging. Whenever the strike can be observed, the second burst of fire may be placed on the target.

The machine rifle with stock-rest is equipped for many forms of indirect fire by simple, rapid means and methods. Brevity will admit of only a few examples of fire here, though many others are available. The examples given are from actual field service.

#### *Example of Overhead Fire*

At Aguas Calientes, Mexico, in the Pershing expedition, the Squadron of the 10th Cavalry under Colonel W. C. Brown, with machine rifle troop attached:

Target: Enemy firing from house. Two machine rifles covered the doors and windows firing over a squad of soldiers that advanced and captured the enemy. No casualties. Enemy fire ceased when machine rifles fired.

#### *Examples of Competitive Fire Between Rifles and Machine Rifles*

After the troops had assembled at Colonia Dublan, Mexico, and had completed target practice, various tests and competitions were held. Comparative firing tests were held between the two squadrons of the 10th Cavalry and the Machine Rifle Troop of the regiment. The writer was in command of the latter troop. The first test was at silhouette targets placed irregularly in the brush at six hundred yards from the starting point. The troops advanced to within two hundred yards of the targets, firing at intervening ranges. There were approximately forty men to each of the eight troops, or three hundred and twenty riflemen. Four machine rifles were in the Machine Rifle Troop.

After the eight troops had completed firing the writer computed the results and decided that three machine rifles would give equal results. The troops hit about sixty percent of the targets. The fire of three machine rifles hit eighty percent of the targets (every target that was seen) with one third less ammunition than the rifleman.

It was then decided to hold a second or special test and this time at long range. The fact was overlooked that rifle fire is least effective at long range. A group of field targets was assigned to the rifle troops and another to the machine rifle troop. Firing was to start at a pistol shot. The range as determined by the machine rifle troop was eleven hundred and twenty-five yards. This sight setting was given to the rifle troops who refused to accept it and used the average estimate of range estimators.

At the signal to fire, the machine rifle troop fired one burst of about five shots short of its target for range adjustment. A mil measurement of two mils gave us the range for all four guns and one hundred percent of the targets were knocked down before the eight rifle troops found the range. The rifle troops hit about fifty percent of the targets.

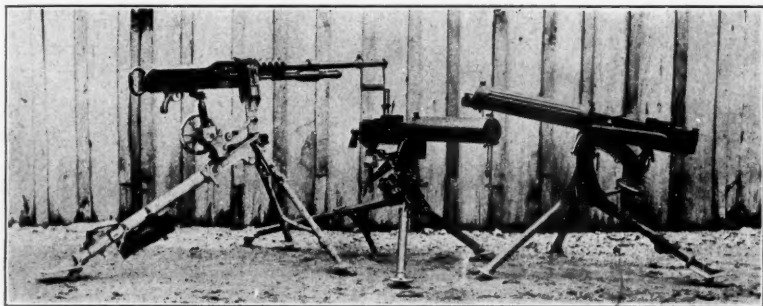


### Machine Rifle Efficiency

There are two methods of organization for machine rifle units.

One method is to place the machine rifles of each squadron in a separate troop. The other method is have a machine rifle platoon as an integral unit of each rifle troop. The first method favors technical efficiency; the second method is supposed to favor tactical efficiency. The enlarged cavalry troop, even without the machine rifle platoon, is a highly complicated piece of mechanism, requiring all the time available for training, and all the skill of its commander for the many forms of mounted and dismounted action. The infantry company commander has neither the horse nor mounted action to consider, yet his time is fully occupied.

Many cavalry officers are primarily interested in horsemanship, in handling the maneuver elements and do not want to be bothered with the strictly



Left—Vickers Machine Gun, Cal. .30  
Right—Hotchkiss Machine Gun, Cal. .8 m. m.  
Center—Browning Machine Gun, Cal. .30

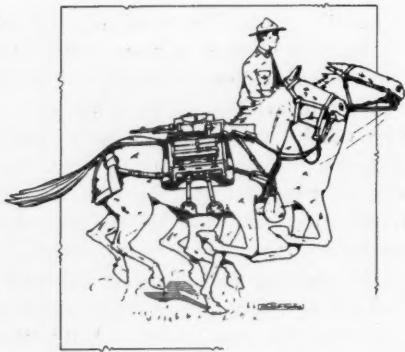
fire elements or pack saddle units. These officers believe in highly trained cavalry but prefer to have their fire support come from units skilled in gunnery. A minority of cavalry officers is interested in the technical training and employment of automatic arms and the other fire elements of cavalry. This division of interest can be utilized to the fullest advantage by assigning the officers of each class to corresponding units.

The cavalry soldier of rifle platoons is kept fully occupied in order to become proficient in one enlistment, yet he has less work to do than the soldier in the machine rifle platoon, who is trained as a cavalry soldier, in addition to machine rifle training and the care of pack animals and pack equipment. The machine rifle soldier would be more efficient were his status the same as that of the machine gun soldier. More time is required to acquire skill in tactical training than in technical training, but this truism applies principally to the officers. The cavalry rifle soldier must be skilled in each type of training; the machine rifle soldier primarily in technical training. Tactical training is of small value to a fire unit—or to associated units requiring fire support—unless the fire unit has technical skill.

A machine rifle troop in each squadron would afford a better opportunity for acquiring tactical skill by all concerned—the squadron commander in particular—than by retaining machine rifle platoons in each rifle troop. The squadron commander would assign technically trained machine rifle platoons to cavalry rifle troops, according to the tactical mission, duty, or requirements of tactical training. This principle is applied to machine guns in infantry battalions. Officers of rifle troops would have more time for all training and especially tactical training were they not required to train machine rifle platoons. Duty with, and command of troops, is highly important for all troop officers. A machine rifle troop in each squadron would afford renewed opportunity for many troop officers.

#### Machine Rifle Course in Firing

The machine rifle course in firing is the next most important matter for consideration. The course should simulate that of the machine gun; not that of the rifle. If we fire only single shots up to six hundred yards we never will have efficient machine riflemen. six hundred to fifteen hundred yards is the machine rifle's principal field of fire. Much of the firing should be at field targets. And short bursts of from three to five shots the most generally effective method of fire for the machine rifle with stock rest or, for the machine gun, for the enemy will usually be partially concealed or at least not standing still. The number of targets hit in a minimum of time is what counts in war.



# Chemical Warfare Weapons and Cavalry

By CAPTAIN G. A. MOORE (*Cavalry*), C. W. S.

CHEMICAL WARFARE—can it interest cavalry with a mortar as a smoke producer, in number of rounds required, fourteen times as efficient as the 75 and three times as efficient as the 155: a white phosphorus hand or rifle grenade ensuring casualty within ten yards of burst; a smoke candle, weighing two pounds, maintaining a screen fifteen times as wide, in proportion to ammunition weights, as the cloud from a 75 shell, and wider than that from a 155 shell; a gas projector which, in batteries of one hundred and twenty, delivers as much gas with one round as one round from all the artillery of the corps, and an airplane mustard atomizer which in twenty-five seconds can make in an area 7000 feet by 400 feet absolutely every living thing a casualty? Do these rough comparisons challenge the attention of the cavalry? Must the cavalry have these aids?

The use of Chemical Warfare weapons and munitions by cavalry, of course and apparently, in cases where cavalry holds a part of a line in stabilized situations, would be coextensive with and similar to their use by the infantry.

However, in the normal role of cavalry it would seem that the life of the mounted branch—mobility—should be the decisive criterion by which the application of chemical weapons and munitions by cavalry would stand or fall.

In reviewing the authorized doctrine of the cavalry and the chemical warfare service, there appear to be many cases where the weapons of the chemical warfare service may be of such value to the cavalry that nothing other can do the job and aid in mission accomplishment nearly so well.

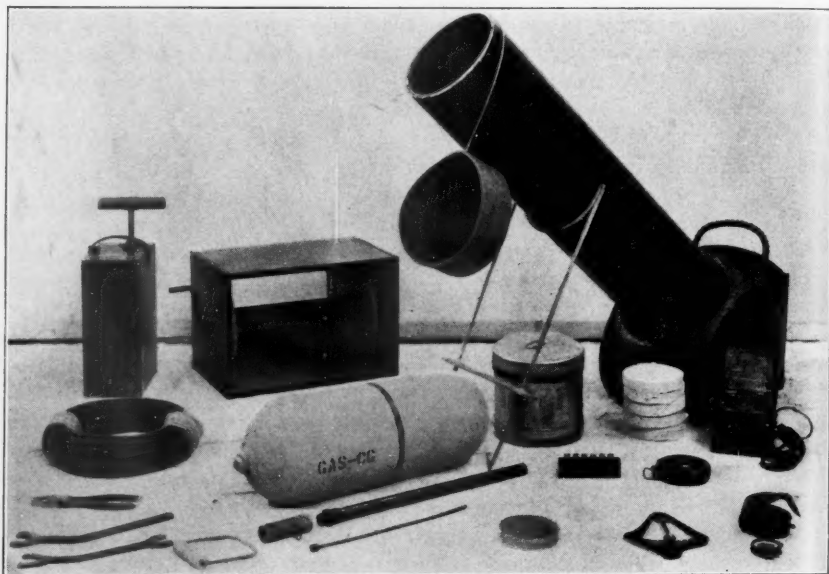
Chemical Warfare troops at present are Army troops. They may be attached to any subordinate units. Their weapons are the four-inch Stokes Mortar, the Livens Projector, and the Chemical Cylinder. In addition to the above, candles are filled and issued by the Chemical Warfare Service. The chemical munitions filled by the Chemical Warfare Service and issued by other services are grenades, air corps bombs, and artillery shells.

## Mortars

*The Four-inch Stokes Mortar.* This is a smooth bore, muzzle loading, high angle weapon, moderately mobile, suitable for projecting gas, smoke and incendiary or high explosive agent. It is effective against small definite targets, for casualties, to produce blanketing smoke, and to screen movements behind one's own lines. As at present transported by carts, it has the mobility of a slow moving rifle company on the march. The weight of the mortar, including a ninety-pound, fifty-one-inch barrel, a hundred and twenty-pound baseplate, a thirty-two-pound bipod, accessories, tools and spare parts, totals two hundred and sixty-seven pounds, equipped to fire.

The shell weighs about twenty-five pounds, and its efficiency varies from twenty-seven to thirty-six per cent. (Efficiency of shell is the ratio of the agent filling to the total weight of the complete shell.)

A complete round consists of the shell body; booster, of which the parts are gaine tube, detonator and felt washer; Mk XI allways (percussion) fuze; and the propellant charge of which the parts are a twelve-gauge cartridge and silk bag powder rings. Some of the fillings at present are six and eight-tenths pounds of phosgene (CG), six and six-tenths pounds of chloracetophenone (CN), and nine and half pounds of white phosphorus (WP). It has been esti-

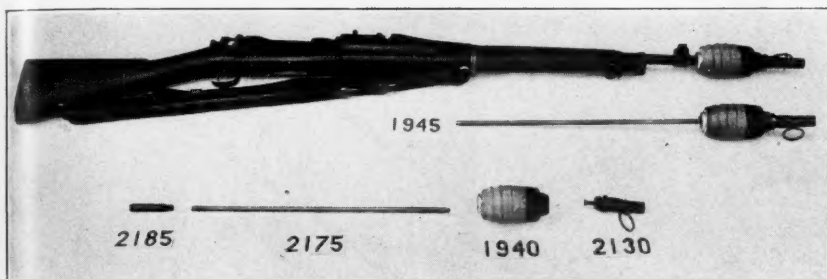


**Projector, Livens, Complete with Ammunition and Accessories for Firing**

mated, as mentioned before, that as a smoke producer the mortar is three times as effective as the 155 howitzer, though, of course, at a much shorter range. A 75 shell, for instance, contains one and three-sixteenths pounds of mustard gas and a 155 shell, eleven pounds; a chemical mortar shell contains about seven pounds. Range varies from two hundred to twelve hundred yards. This weapon can fire, for short periods, fifteen rounds per minute; its average rate is ten per minute. At a sixty degree elevation it has a hundred and twenty-yard deflection at one thousand yards.

*The Four and Two-tenths-inch Chemical Mortar (Experimental).* This new weapon is rifled and has a range up to twenty-five hundred yards. It probably will have a slightly greater sustained rate of fire. Due to the rifling of this mortar its accuracy is improved over the smooth bore mortar.

*The Livens Projector.* This is a crude form of high angle mortar, of a barrel length of two feet nine inches and a weight of one hundred and five pounds, with a baseplate weighing thirty pounds, having a twenty-one and seven-eighths-inch by seven and five-eighths-inch shell of sixty-four pounds, forty-seven per cent efficient, capable of being discharged electrically either with the shell in the mortar or outside it. The fillings, among others, may be phosgene (CG), mustard (HS), Titanium tetrachloride (FM), HE, and Chlorpicrin (PS). The barrel is two feet nine inches long and eight inches in diam-



**Grenade, Combination Hand and Rifle, C. N. Live, Complete, Showing Assembly**

eter. The projector is installed either in full or semi-surface set-up, i. e., either fully buried or half buried at forty-five degrees. The complete outfit consists of the projector, the shell, the propellant charge and the firing accessories. The shells, placed in the projector, are wired in series, and the battery is fired with an exploder box.

By surprise this weapon delivers large quantities of agent in high concentrations on targets up to fifteen hundred yards. The range is governed by the amount of propellant. About two hundred and twenty-five pounds of material are required for each projector installed. One round only is fired per set-up.

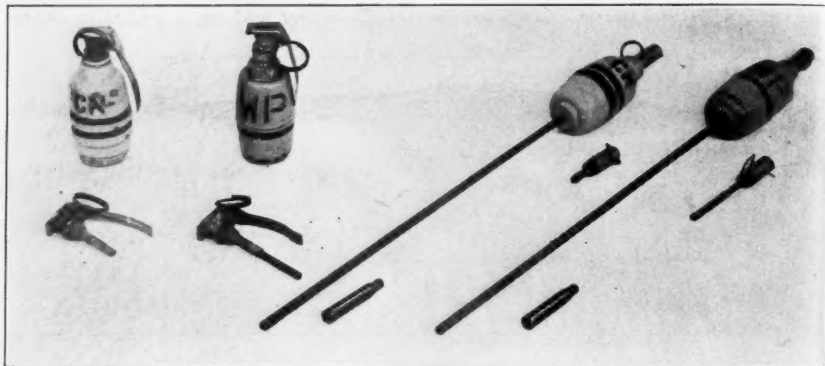
#### **Grenades—Candles—Cylinders**

*Chemical Grenades.* These weapons, with respect to filling, are designated as gas, smoke, or incendiary, and with respect to operation as of the burning or exploding type. They may be projected by hand or with the rifle; the range of the former is about thirty-five yards, and of the latter up to two hundred and seventy-five yards. The hand grenade weighs less than a pound and the rifle grenade about a pound and a half. These weapons are used for casualties, screening, blinding, harassing and destroying material.

The size of each is three and three-eighths inches by two and one-eighth inches. At present both hand and rifle grenades contain white phosphorus and chloracetophenone (CN). Recent experiments have demonstrated that personnel within ten yards of the point of burst of a WP grenade will be certain to be a casualty at once.

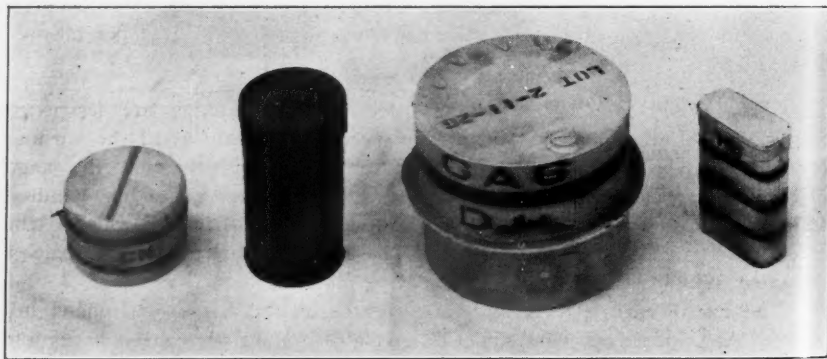
*Candles.* Chemical candles burn about two minutes, being a weapon of opportunity. The HC candle weighs two pounds and the toxic smoke, diphenyl-

aminechlorarsine (DM) candle about nine pounds. The smoke candle (HC) placed five to a hundred yards will perform the same screening duty as sixteen 75 shells or seven 155 shells. The two-pound candle is five and seven-eighths inches by three and three-eighths inches by one and one-half inches, and the toxic smoke candle seven inches by two and seven-eighths inches. The HC candle may be fired electrically, like livens shells. Taking advantage of favor-



**Grenades, C. N., and W. P. Hand and Rifle, Complete**

able terrain and wind, these weapons may screen flanks, river crossings, movements within one's own lines, or they may be used to draw fire. The DM candle, a substitute for the cylinder, is a harassing weapon, causing coughing, sneezing, headache, vomiting and physical and mental depression. It penetrates all but the most modern masks.



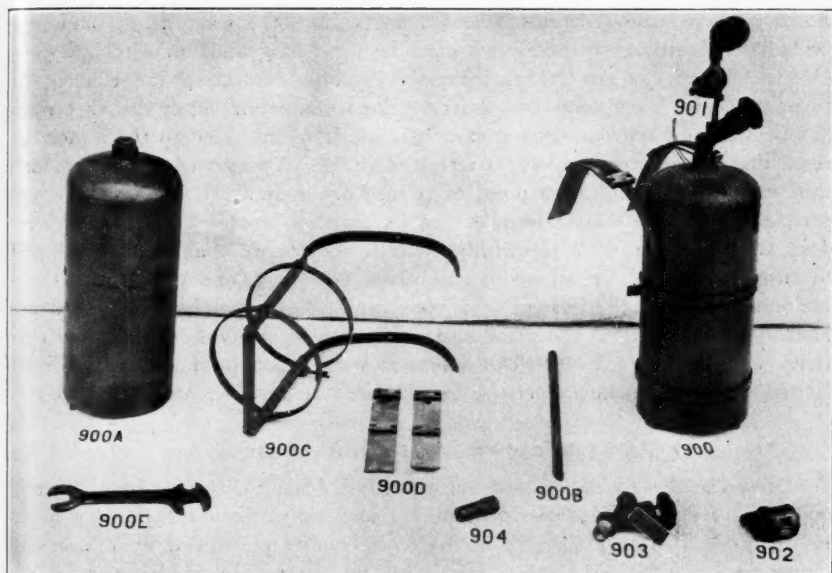
**Candles, C. N. Smoke Substitute, D. M. and H. C.**

In addition to the weapons and munitions thus far described, it may be mentioned that the artillery has various kinds of chemical filled shells, having



an efficiency of from ten to fifteen per cent. The fillings at present are for the 75, HS, CN and WP; for the 155 howitzer, HS, CG and WP; and for the 155 gun, HS.

*Cylinders.* *The Portable Chemical Cylinder Mark I, Type I.* This eighteen-inch by eight-inch gas container fitted with a shoulder carrier weighs forty-eight pounds and contains thirty pounds of agents, having thus an efficiency of about sixty-two and one-half per cent, the highest efficiency of any chemical weapon. It is used for cloud gas attacks, of course, emitting the gas from



**Cylinder, Chemical, Portable, Mark I, Complete with Accessories**

one's own lines. Its limitations are meteorological conditions, and the quantities that can be transported to the point of release. Non-persistent agents, especially CG, released in a wind of about seven miles per hour, preferably from six o'clock, give the cylinder its best opportunity. It has the advantage of having the best mobility for weight of gas carried and the installation causes no noise. This cylinder, fitted with a nozzle, which minimizes loud hissing and lessens the freezing at the nozzle, is usually fired electrically in large groups of several thousands.

#### **The Airplane**

By means of special containers and dischargers, which can be dropped as gas tanks are gotten rid of on occasion, the bomber, at high altitudes and even at night, by a pressure apparatus, permitting the liquid to fall as in still air like rain, can sprinkle large areas with liquid gases. With the non-pressure attachment any type of plane, flying low, can release liquid agents, at once

atomized by the rush of air, with accuracy on a target in the path of the wind. The chemical air bomb is the third manner of utilizing the plane in chemical warfare.

The radius of action of the plane, the resultant increase in depth of attack, and the potency of the chemical agents used, especially mustard, may influence the organization of the theatre of operations, in particular with regard to supply and concentration factors. At present there is no practical method of protection against liquid mustard. It burns all skin with which it comes in contact. Impregnated clothing protects only against vapor mustard; impervious clothing, though proof against liquid mustard, is hot, sticky, heavy, and prevents skin breathing; it therefore cannot be worn long and limits mobility.

This means of projection of liquid vesicants, embracing the element of surprise, denies large areas by rendering them uninhabitable, or makes certain practically one hundred per cent casualties of those subjected to the attack, or remaining in, or entering the area after the attack. A target of a standing man fifty yards down wind from point of release of simulated HS in a recent experiment had some 600,000 droplets on its exposed front. Targets four hundred yards' distant were plentifully covered with more than sufficient liquid to ensure casualty. In atomizing the plane flies from one hundred to three hundred feet from the ground at a speed upwards of two hundred miles per hour. Add to this that the plane also can screen by ground smoke or by curtains, and one sees a practical potential weapon of unlimited capabilities. Liquid mustard has never been dispersed from an airplane in this country.

#### Employment of Chemical Agents

How can these weapons and munitions be of use to the cavalry? Several quotations from *Field Service Regulations* and *Employment of Cavalry* might be of interest—"Large Cavalry units are frequently reinforced by infantry in motor trucks." "When Cavalry is required to occupy and hold important advance positions it is, when practicable, reinforced by infantry in motor trucks, artillery and machine guns." In the above cases, the cavalry will probably move by roads and the chemical troops attached to the infantry can march to the point desired, taking with them their weapons and munitions.

Again—"The ability of Cavalry to conduct delaying action makes it an especially important element of the rear guard when the main body has succeeded in getting sufficient distance from the enemy; it may then constitute the principal element of the rear guard." "Cavalry covers the retirement and retains contact with the enemy." Would quantities of candles, dumped by the retiring infantry, be of use to the cavalry in effecting their own withdrawal? "The duty (counter-reconnaissance) will be much simplified if the terrain is favorable, the mountain chain with only a few passages and an unfordable river with only a few bridges, a dense forest with few roads are very advantageous." "When a bridge must be held against marauding bands of the enemy . . . or when a bridge is not desired for use by our own troops but is to be denied to the enemy" (defense at the crossing). It would seem that



the use of chemical agents, transported in these situations by chemical troops with the attached infantry, would be of great value. One might visualize, for instance, a terrain feature such as a pass of even the width of a mile at which a pursuing enemy must be stopped by the cavalry in order to permit the main body, the infantry, to escape. Three hundred and twenty-four livens shells, filled with mustard gas, set up by the retiring troops, exploded by a few squads, when the cavalry is ready to retire, statically by electricity (without the projector), would effectively mustardize an area one mile wide and one hundred yards deep. (These shells are a load for eight escort wagons). Pursuing enemy could not mistake the presence of the agent, and if the enemy insisted on passing over this area within a few hours his casualties from this mustard would either totally prevent his immediate continuance of the pursuit or so cut down his rate of march that the pursuit would be ineffective. To accomplish this same mission at a range of four thousand yards, five thousand nine hundred and forty artillery shells of the 75 calibre and one thousand and eighty of the 155 calibre would be required.

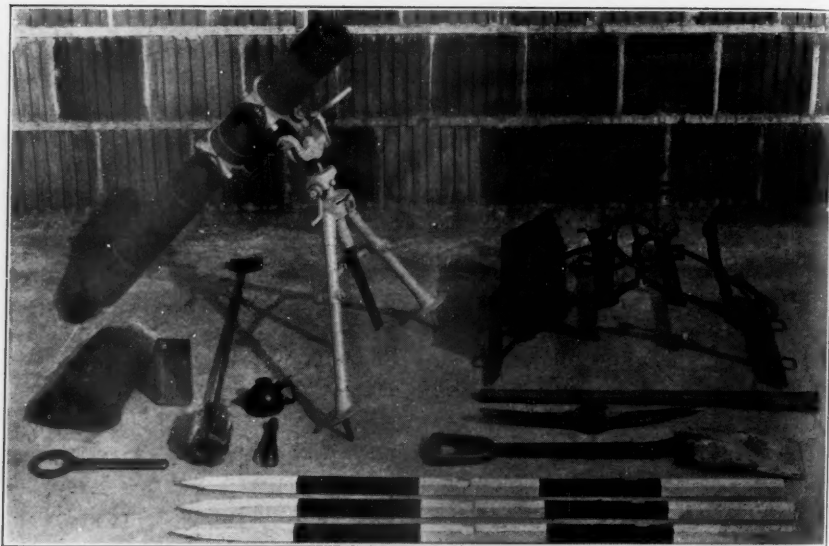
In the above connection in the matter of the cooperation of the infantry and the cavalry in withdrawing from action the *Employment of Cavalry* states: "In the withdrawal from action, the infantry will hold on until the last moment or until ordered by higher authority to withdraw and will be covered in its withdrawal by the Cavalry which can still hold for some time and rely upon its mounts to effect its own withdrawal."

*Field Service Regulations* states that smoke screens may be effectively employed to cover the movement of withdrawing troops. Due to the high efficiency of chemical mortars, one platoon of mortars will consume about one-fourteenth as many shells per hundred yards of smoke screen as a battery of 75's. The use of these weapons by infantry attached to cavalry would be equally effective in the counter attack as in the withdrawal, for in the *Field Service Regulations* we find the following: "Surprise is obtained by . . . concealing the location and movements of the counter attack elements; and by concealing the location, direction, time and intensity of the counter attack. The main body, at all costs, must deny the enemy important observation stations essential for hostile control and development of coordinated fire power and power of maneuver, thereby placing the enemy at a disadvantage and providing a favorable opportunity for counter attack." Also, in defensive positions, we find this: "Surprise is employed to increase the effectiveness of movement and fire power. Surprise is obtained by denying the enemy observation of the interior of the defensive position by concealing the location and movements of the elements of the defense and the location, direction, and time of counter attacks."

Considering the pursuit, we read: "Whenever practicable, cavalry advances along roads paralleling the enemy's line of retreat, delivering repeated attacks against hostile flanks, carrying out destructions along his line of retreat, attacking convoys and attempting to beat the enemy to defiles, bridges and critical points. Having reached these last-named objectives, the proper

use of chemical agents, particularly vesicants, could so effectively hamper the speed of withdrawal as to permit the pursuing main body to catch up.

"Counter-reconnaissance is accomplished by engaging the enemy with a view to restricting his observation or by denying to the enemy entrance into a certain area or passage of a certain line." In the performance of these duties cavalry might welcome the added weapons of smoke and vesicant



**Pack Outfit, Phillips, Experimental. Weight of Pack, Loaded, 248 Pounds**

agents, particularly the latter in areas not to be used at once by their own troops.

#### **Conclusions**

Without adding a pound of equipment to the cavalry, without changing its organization, having in mind always that its mobility must not be lessened, being ever mindful of its constant search for additional fire power and casualty producing agents, as well as increasing its ability to effect surprise, whether cavalry is employed in advance or rear of the main force, especially so long as infantry is attached to it in the first case or it is attached to the infantry in the latter case, it seems to be reasonable that chemical warfare troops' weapons and agents can be of inestimable value to the cavalry in the better accomplishment of its missions.

# Sword, Lance and Pistol

By FIRST LIEUTENANT FREDERIC DE L. COMFORT, *Cavalry*

ALMOST since the beginning of time, these weapons have been the distinctive arm of the cavalry service. The early Assyrian cavalry, in the year 700 B. C., riding without saddle, were armed with the sword and lance. When the Greek cavalry was organized about 400 B. C., we find them still armed with the same weapons. The cavalry of Alexander the Great at the Battle of Arbela, 313 B. C., was used to great advantage. Although his cavalry was composed of several different types of armament, Alexander placed most reliance upon his two chosen regiments heavily armed with both the sword and the lance. In both of these regiments, the horse, as well as the rider, was protected with a heavy armor. The sword as then used was chiefly for cutting, but about the year 200 B. C., the Romans, recognizing the superiority of the point over the cut, commenced to train their soldiers accordingly. At about the same time they also recognized the vast superiority of iron over bronze and commenced the making of iron swords in place of bronze ones. During the Second Punic War the bulk of the Roman Legions were armed with a short thrusting sword which could be used for cutting as well as thrusting should the occasion arise. The thrust, as used by the Romans, became so effective that during the next two hundred years they clung to the thrusting sword, and were so efficient in its use that enemy armed with the heavy, unwieldy cutting sword were reluctant to attack them.

The awe and respect in which the sword was regarded by these ancient soldiers is well exemplified in the actions of Atilla, the Hun, when in 450 A. D., he appeared before his army grasping an ancient sword in his hand which he represented as the God of War worshipped by their ancestors, in order to instill in them the same dash and aggressive spirit which the old sword portrayed.

The advent of the knight brought another change. Both man and horse arrayed in heavy armor rode slowly out to give battle to the foe. We still find the sword and lance the chief weapons of the knight although in some instances a shield was added. At the Battle of Hastings in 1066, the Norman knights were so armed while the infantry was mainly armed with the bow, although the sword was still retained for hand-to-hand encounters. In addition to the sword and lance some of the English knights were armed with a so-called hatchet which had a very sharp blade about a foot long and was used only for cutting. In one instance, an English knight attacking a Norman with the hatchet, missed the helmet, struck the horse and completely severed its neck. Turning from his victory, the knight found another Norman charging down on him with the lance, and being unable, with the hatchet, to divert this attack, was killed. The Normans placed great reliance and confidence in the sword, and during this battle used it very effectively, but for cutting chiefly.

By the sixteenth century, the sword had become narrower and more pointed

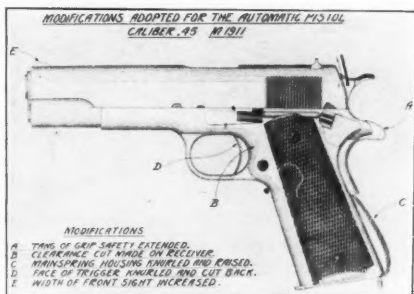
and its use as a weapon for thrusting began to predominate. The preference of the old Romans for the point was rediscovered under new conditions, and during the reign of Charles V the modern art of fencing originated. The cavalry, however, still carried the sword and lance. This sword was used more as an auxiliary lance and was utilized almost exclusively for thrusting. The rapier had reached the height of its glory and the word sword, except for war, was almost forgotten.

With the beginning of the seventeenth century, the firearm had made its appearance and we find cavalry armed with the pistol, and in some instances, the carbine, in addition to the sword. The cavalry of Gustavus Adolphus in the Thirty Years War was armed with both the sword and the pistol. His cavalry was trained to charge in three ranks. The first or front rank only was allowed to fire, and then only when about to close with the enemy. The second rank, at times, was also permitted to use the pistol, but when it had been once discharged, both ranks were trained to draw saber and push the charge home. The troopers of all ranks were equipped with two pistols, and while the first two ranks fired only one pistol, keeping the other in reserve, the rear rank charged entirely with the sword, keeping both pistols in reserve. In contrast to this, the cavalry of Frederick the Great was only permitted to fire the pistol mounted when the hostile cavalry had commenced to retreat or to withdraw from the impending charge. Some leaders, however, at this time prohibited the use of firearms in the charge. The battle of Waterloo was filled with the cavalry actions of both sides. Early in the engagement, the British cavalry charged with the saber, Ney's French batteries, sabering the cannoneers, cutting traces, killing horses and rendering the guns useless to the French for the remainder of the day. Some of Napoleon's cavalry were using a straight thrusting sword very similar in design to the present day French cavalry sword.

### The Pistol

The advent of the firearm naturally wrought many changes in cavalry combat. At first, these pistols were only single-shot and vastly different in caliber and appearance. As we are mostly interested in the American military arm, let us trace briefly the pistol as issued to our army. At the outset of the American Revolution there were no government arms factories and arms were purchased by the different Committees of Safety for arming the troops. As the army was then composed mostly of infantry, the pistols issued were for mounted officers and messengers. Most of the pistols of this period were of French or British make and even those made in the states followed them very closely in appearance and design. Although the government had established a few factories for making arms, it was not until about 1800 that an earnest effort was made to equip the regular army with government made arms from the arsenals at Springfield and Harpers Ferry. Arms were still purchased by the government from the citizen gun-makers but chiefly for issue to the militia and volunteers. Prior to the War of 1812 there were only 5,278 officers and enlisted men in the regular army and the two government armories could well supply the demand. Upon the increase of the regular army to 35,579 enlisted

men, following the War of 1812, the government armories could not supply the demand and contract and purchase arms were issued to the regular army as well as the militia and volunteers. The first pistol made by the government armories is believed to have been the Model 1804 Harpers Ferry. This pistol is very interesting as it was the earliest rifled pistol issued by any government to its regular army. This pistol was a flintlock, 54 caliber with a ten-inch



**The Present Regulation Colt Automatic  
Pistol, Cal. .45**

barrel. It was first issued only to officers on duty on the frontiers where the Indians were hostile. In 1842 the government commenced the issue of percussion single-shot pistols in lieu of the flintlock. It is interesting to note that the Mexican War was fought largely with the flintlock.

About 1836 the Colt revolver made its appearance, but it was not until 1847 that the government contracted for a number of these revolvers, some of which were used in the Mexican War. 1855 the government armories made a pistol carbine, the Model 1855 Springfield. This pistol was found to be very accurate and was issued to the cavalry, but did not come up to expectations as its line of fire was vastly different when used as a pistol and when it was used as a carbine with the shoulder stock. The early experience of the men on the western frontier with the revolver is too well known to mention here.

### **Weapons of Mexican and Civil Wars**

Both the Mexican and Civil Wars are filled with cavalry actions. We find many instances in the former where our cavalry armed with the saber and pistol was opposed to the Mexican cavalry armed with the lance. The charge of a squadron of the Second Dragoons (Second Cavalry) commanded by Captain May at the battle of Resaca de la Palma is interesting. Riding in column of fours down a narrow road, the squadron charged a battery of Mexican guns, attacking with the Saber and capturing the guns, although at the objective Captain May found only six men still with him.

At the beginning of the Civil War the South had a decided advantage over the North in its cavalry. The Southerners were natural horsemen and accustomed to the use of arms while the men of the North were not. The

cavalry under Turner Ashby, attached to Jackson's Army in the Shenandoah Valley in 1862, was far more efficient than the Federal although not so well armed. The majority of the Southern cavalry showed a strong predisposition for the pistol over the saber. The Federal cavalry was armed with both the saber and the revolver. Although there were many different types and makes of revolvers used during the war, the preference seems to have been decidedly



**Colt Revolver, Cal. .44, Used Extensively During the Civil War**

in favor of the Colt. Recently Mr. Walter Cline, an authority on Civil War arms, of Chattanooga, Tennessee, has been conducting a series of experiments in firing the Civil War revolvers. From the results obtained, their accuracy



**Upper—The Savage, Cal. .36, Revolver  
Lower—The Starr, Cal. .45, Double Action Revolver  
These Weapons Were Also Used During the Civil War**

is remarkable and they compare well with the weapons in use to-day. It is interesting to note that records show that only nine hundred and thirty-three saber and bayonet wounds were treated in the Federal Hospitals during the war.



### The Lance

Both the North and the South conducted some experiments with the lance as at that time a great part of the European cavalry was armed with it. The lance requires highly trained personnel and horses, which fact alone may prohibit its use in any hastily organized army. The lance has many advantages and when in the hands of highly trained troops has proven very successful. Authorities well versed in its use however vary widely in their opinion as to its real value as compared to the saber. The lance has a longer reach than the saber although it is firmly believed that a good swordsman can defeat an equally good lancer. A charging force armed with the lance must produce a high state of morale among those so armed and vice versa. The lance is very effective in charging artillery and wagons due to its advantage in reach. It is very cumbersome to carry, increases the load on the horse, and is much in the way riding cross-country, through heavy woods and in dismounting to fight on foot. The lance affords the trooper a decided advantage over the pursuer armed with a saber, but in the melee the lance may become a handicap



*Wide World Photo*

**The Charge of The Royal Scots Greys**

due to its unwieldiness and the saber become an asset. With the saber in the hands of men trained in its use, the ultimate desire in a charge is to close with the enemy, while with the lance with its greater reach, the kill is accomplished before actual closing, if at all. History has furnished many examples of combat with lance versus saber, lance versus lance and lance versus fire power and from the results the value of the lance as a weapon cannot be denied. It is not the number of casualties that will claim the victor in any cavalry action but the side who drives home its charge with whatever weapon it may be armed is the one who will send the enemy survivors from the field, grossly exaggerating the powers of the enemy.

There are many different engagements during the Civil War where the saber and pistol were used that are too well known to mention again here. In a recent conversation with a former Federal cavalry officer he related a number of personal experiences showing the uses of the saber and pistol. His regiment was active in the cavalry operations in Alabama, Georgia and Tennessee. The regiment was armed with the Spencer repeating carbine, the saber and the revolver. The saber was used almost exclusively in all charges where

the organizations charged as a unit. Each soldier carried one revolver and the officers carried two, usually in pommel holsters. The revolver was used extensively in the melee following the charge. At the battle of Mossy Creek, the regiment charged with the saber, a dismounted force three times its own strength, forcing the immediate withdrawal of the dismounted men. The saber during the engagements was used practically exclusively for cutting.

As the war progressed the use of dismounted action was gaining in favor

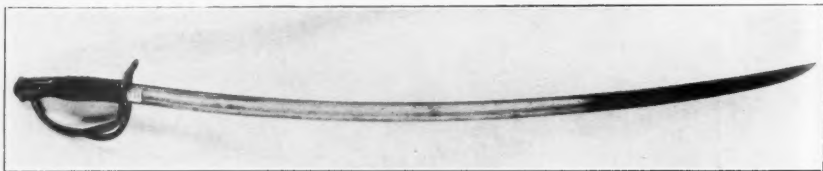


**The Present Regulation Cavalry Saber**

and both sides began to rely more on the pistol or revolver. In November 1864, a troop of Mosby's cavalry armed with the revolver charged a troop of Federal cavalry armed with the saber, and in the ensuing melee the Federal loss was twenty-four percent killed while the Confederates lost one percent.

#### **Weights and Lengths Of Sabers**

Following closely after the close of the Civil War in America came the Franco-Prussian War and later the Boer War. The lance and saber were used extensively with varying results. There were several changes in the armaments of the foreign armies and just prior to the World War we find the saber being carried by all the leading countries of Europe and the lance by all except Austria-Hungary. None were totally equipped with the pistol although



**The Civil War Cavalry Saber**

officers and non-commissioned officers carried it practically without exception. The comparison of the different sabers of some of the leading armies is interesting. Taking the average dimensions of the British, French, Italian, Dutch and Japanese swords and comparing the result with our own saber reveals some interesting facts. The average length of blade is thirty-four and eighty-five hundredths inches while our blade measures thirty-five and one-tenth inches. The average weight is two pounds eleven and one-half ounces while the weight of our saber is two pounds six ounces including the knot. Ours is the lightest saber of the group excepting the Japanese which is three and



one-half ounces lighter. The British, French and Italian use the straight thrusting sword while Holland and Japan use the saber.

### The Point and the Cut

Let us consider briefly the relative merits of the point and the cut. In spite of all the improvements in the art of war, man to man combat has been and still is the deciding factor in battle. Every branch of the world's military forces is equipped with a hand arm. The infantry considers the bayonet indispensable, not only for the number of its casualties, but because of the moral effect and the aggressive and offensive spirit which bayonet training instills in the men. What the bayonet is to the infantry, the sword is to the cavalry. It has often been said that the American soldier will always resort to the cut in any time of stress and excitement regardless of what they have been taught. One cannot deny that men once trained in the use of the point and realizing its deadliness on fast moving horses would never abandon it for the cut. Without the speed of the horse to consider, the cut might have a chance. British experience in Palestine indicates that speed is not an absolute essential to drive the present sword home. In one engagement, the British commander said "point your sword at the enemy's belly and ride him down." History tells us that in Palestine there were thirty-two successful and two unsuccessful cavalry charges. In practically all of these charges the losses among the mounted men were small while the losses to the enemy were very large and in practically every case were inflicted by the saber, using the point almost exclusively. In a charge delivered in line or other close order formation, where the cut is used exclusively, the speed of the horse is discounted and the trooper is limited to the use of the front cut only due to the nearness of other troopers. The cut requires more accuracy and timing than the point, and although the point will not always be successful, in practically all cases it gives the greatest chance of success. Men are naturally excited during a charge or melee and the cut is bound to be by a few men who have momentarily lost their heads. For this reason the saber must be sharp. Remember the essential qualities of a good sword are *sharpness*, *balance*, and *elasticity* with *firmness*. An attack correctly made is a perfect defense against either a point or a cut. History tells us that whenever man has relied on brute strength and courage alone he has used cutting or thrusting weapons whenever he has come to hand to hand encounter. In charging with the point the prone position of the trooper reduces the available target, aids the speed of the horse, outreaches and hence outkills the enemy cut and transforms the horse into a charging, steel pointed weapon. In cutting more of the person is exposed than in the point. With the edge, one either parries or cuts, while with the point the cut is parried while the blade is still in line with the opponent's body and the actual attack is being delivered. The cut, which through a man's clothing may only bruise, is spectacular. It is the silent point that kills. It is far more pleasant for a man to believe that he will only receive a bruised head than to think of a sharpened steel point exploring his insides. One saber thrust in the abdomen is far more likely to prove fatal than a cut

on any part of the body. Oriental swordsmen will admit that no cutting swordsman can fight on equal terms with one using the long thrusting sword. Against infantry the point is the only attack that can outreach the bayonet. Among wagons or trucks and artillery where the men can gain shelter behind the wheels, the cut is useless and the point is the only thing. The lance and revolver or pistol are both equally as effective as the saber in the attack against infantry, wagons or artillery. The point is superior to the lance as a thrust delivered at the point of the lance deflects the point and allows the lunge of the saber to go home. The tendency of the lancer is to strike high at the moment of contact.

#### **Training with the Saber**

All instruction with the saber must begin with learning and mastering the elementary position dismounted. A good swordsman is one who instinctively and automatically knows and executes any desired movement of himself, his sword or his mount necessary to carry out his wishes to overcome obstacles or opponents which may arise during combat. To such an end is our instruction with the saber directed. The purpose of all saber training is to make vigorous, offensive, thrusting fighters. We can no more make a good swordsman by teaching him the manual of the saber on the parade ground than we can make a good rifle shot by teaching the manual of arms. Beginners will naturally not have faith in the saber but as the instruction progresses and their work shows improvement it will invariably result that another has been converted to a strong believer in the powers and possibilities of the saber as a weapon. Mounted instruction should follow immediately after the trooper has mastered the positions dismounted. After the trooper has mastered the movements at the slower gaits all work should be done at a gallop. A drawn sword must always be associated with speed. Saber training is training in suppleness, speed, horsemanship and agility—all true cavalry qualities.

#### **Form**

Another important point is *form*. Form is the art of doing a difficult thing well and in the easiest and simplest manner. Every sportsman who desires to improve his own particular game will make a careful study of the best form and then try and pattern his own after it. Too much stress cannot be placed on form in swordsmanship or in handling the pistol. In making an attack with the saber it is essential that the blade and arm be in one and the same straight line. With the pistol it is essential that the barrel is in prolongation of the forearm in order to secure the best results. Foes of the saber will often say that the saber will break. An unbreakable saber cannot be made unless it is far too heavy for any practical use. It is just as logical to say that any firearm is valueless as they all will cease to function at some time or other. As stated above the pistol must be in prolongation of the forearm. It should be almost second nature to assume this position. The pistol is fired with a straight thrust toward the target, not thrown down on the target. This latter practice was common with the old revolver. It is probably

the result of an old custom. Most of the old revolvers were single action and the throw down facilitated the cocking. The throw down followed a rather decided throw back which was done with the old percussion cap weapon in an effort to throw out the fired cap which might otherwise fall down into the mechanism and cause the revolver to function poorly or jam. The pistol goes always hand in hand with the saber, and it should be instinctive for the trooper to return pistol, once emptied, draw saber and continue in the attack. For effective work with either the saber or the pistol, a thoroughly trained horse is essential. The horse must be trained to run straight and fearlessly no matter what might be encountered. The effective range of the saber is only five or six feet and that of the pistol only about forty yards, but actually the range of both is only limited by the strength of the morale which governs its actions. History tells us that the longer the range of the weapons employed, the greater the distance at which the men will fight. The ideal cavalryman is one who, when he closes with the enemy, things of nothing but riding hard in straight lines, checking and turning, firing his pistol and lungeing viciously at everyone wearing the enemy uniform. It is an established fact that the saber has never failed when in the hands of those who have the skill and courage to use it, and have placed in it the confidence it so well deserves. Cold steel is still a supreme arbiter of the fight, whether it to be the bayonet, lance or saber. In a melee, the trooper must always keep on the alert, moving at speed toward one opponent, then check and ride on a straight line at another. Always menace your opponent with whatever weapon you may be armed. Attack with speed, viciousness and dash rather than await being attacked. Make every possible use of the speed and handiness of the horse. The weakest point of attack for a swordsman is the left rear and an enemy caught in that position must be attacked. Should a swordsman ever find himself attacked at his own left rear use thrusts and cuts at the pursuer and at his horse to gain time to maneuver and get into a position to attack.

#### **Power of Saber, Lance and Pistol**

The power of the saber, lance and pistol is not measured by the number of their victims, but by the effect produced upon those who survive their destroying powers. Dead men tell no tales, but a thousand panic-stricken fugitives, justifying, by their exaggeration of the enemy's prowess, their own flight from the field may well destroy the morale of an entire army. Cavalry is an arm of opportunity and its weapons are those of opportunity. Nothing is too good for the cavalry leader, who, recognizing the opportunity, seizes it and leads a successful cavalry charge. The cavalryman's best weapon is his horse and regardless of the weapon, the best man on the best horse will win. A passive attitude will lead to ruin. The mounted soldier must always be ready for an encounter which may last only a few minutes but be famous for centuries.

# The Cavalryman and the Rifle

By BRIGADIER GENERAL JAMES PARKER, M.H. D.S.M., U. S. Army, Retired  
*The views of one, who, for fifty years, has been an ardent advocate of training with the rifle for mounted as well as for dismounted action.*

THE eternal principles of cavalry remain the same throughout the centuries. At times, by the change and improvement in arms, the importance of cavalry has been obscured. But the horse has always given increased efficiency to the soldier.

Let us cease to visualize, as a scene of possible operations, the closely populated sections of Europe. Let us turn our eyes to the vast spaces of our own continent, our own hemisphere. Let us look to Canada, Mexico, Central America, and South America. On American terrain there will be no such thing again as armies without flanks. In the collision of mobile forces much of the paraphernalia of siege warfare will disappear.

Let us dismiss from our minds these thoughts, this incubus of gas, gas masks, of grenades, of flame throwers, of tanks, of heavy artillery. These things do not belong to a marching army. "Compared to materiel the importance of men is as three to one." The human element is always the more important. As in the days of Genghis Khan and the days of Napoleon, success will depend upon men and mobility. Or, as Forrest said "on getting there fustest with the mostest men!"

## Useful Cavalry Missions

The mobility of an army, the freedom from interference of its marching columns, depends upon the cavalry which precedes it, envelops and protects it, and forces a passage for it through the enemy's outlying detachments. The cavalry, if properly handled, will explore the territory in front of the army. By fighting mounted, as well as dismounted, it will drive away the hostile cavalry. It will discover and make fruitless the enemy's attempts at ambush. It will seize and hold strong points in advance. By fire action it will hold up and delay the enemy's march. It will force his premature deployment. When conditions are suitable, it will execute great raids into the enemy's country, raids of armies of mounted riflemen, interrupting the enemy's communications, his mobilization, capturing his depots, his outlying detachments, placing him on the defensive, forcing him to retreat. That these things have been done, will be done, is shown by history.

## Cavalry in the World War

But say some, times have changed; these things were not done in the last war! They are mistaken. In Palestine under Allenby three divisions of British cavalry, passing around the Turkish flank, marched seventy miles in thirty-six hours. Destroying the depots, the nerve centers of the Turkish army, they forced it to a hurried and disorderly retreat. Intercepting and at-

tacking its detachments, in fourteen days the British cavalry completely destroyed the Moslem army, capturing one hundred thousand prisoners and one thousand four hundred guns.

These people who despise the horse ignore the feats of the British cavalry in Mesopotamia, of the Russian cavalry in Asia Minor and later in Poland, of the French cavalry in Bulgaria, of the German cavalry in Russia and on the western front at the beginning of the war.

The best exposition I have read of why on the western front cavalry accomplishment is not even more evident, is contained in an article on Cavalry in the World War in the *Encyclopedia Britannica*, new volumes, 1926, by Lt. Col. Charnington, British Army. He claims that only the British cavalry understood the power of offense and defense given by the rifle. They had learned it in South Africa.

The French had ten cavalry divisions, the Germans ten, the English one. The German cavalry was often misdirected and had few opportunities to make good. Their principal service was in slowing up the advance of the British army through the thirty-mile gap between Kluck and Bulow in the battle of the Marne—an advance which if promptly made might have changed the complexion of the war. In 1915 the Germans sent most of their cavalry to the East. In the great break-throughs of March and May, 1918, the Germans had no cavalry, a fact to which Ludendorff attributes the failure of those offensives, saying "without cavalry it is impossible to reap the fruits of victory." One cannot study those tremendous attacks and their ultimate failure without being convinced that with a sufficient force of cavalry properly used, the Germans then would have won the war. There was nothing between the German army and victory except distance and the fatigue of the foot troops.

In their retreat to the Marne in 1914 the French placed three divisions on the exposed left flank and seven in the center. Who can doubt that an American force of this size properly handled could have delayed greatly the advance of the German columns? But the French, instead of our rifle, had an inferior carbine; the annual target allowance was fifty rounds; the men were not trained in dismounted action. Mounted they made many gallant attacks, but with little success.

#### **Opportunities for Independent Action**

In war one often sees one army retreating, another army pursuing. In such a case cavalry is specially suited as a delaying force. Occupying strong points such as villages, railroad embankments, river crossings, woods, etc., it can resist until the last moment, without fear of being cut off, since its horses provide a means of escape. By proper dispositions a small body of cavalry can thus deceive the enemy into believing it is confronted by a considerable force of infantry, thus forcing the enemy to deploy, delaying him in his advance. Close country, much cover, woods, hills, etc., are favorable for such resistance, since the horses can be concealed and surprises made possible. Wooded country was the terrain in which our cavalry forces operated during

the Civil War, a war in which the proportion of cavalry to infantry increased every year.

It should not too often be impressed upon the young cavalry officer that it is in the cavalry more than in any other arm that the junior officer, the captain and the subaltern, gains an opportunity for independent action. Both the army that advances and the army which retires or stands fast have their fronts covered by a line of detachments, great and small, of cavalry. In the inevitable collisions which occur, squadron against squadron, troop against troop, platoon against platoon, all the conditions of war, of campaign, of battle are produced in miniature. The officer in command must know when to charge, when to fight on foot; when to attack, when to retreat; when to use the pistol, when the saber. He should be experienced in ambush. When surprised by an ambush he must know whether to dismount, to retreat, or to charge. If he is going to dismount, what about his horses now under fire—should he not first retreat to cover? Being engaged with an enemy detachment, is a flank attack possible under the circumstances? What patrols are necessary to protect his command from surprise?

I give the above as a sample of some of the almost infinite conditions of combat the cavalry detachments protecting the front of an army are liable to encounter. The commander of such a detachment is on a small scale an "army commander." To learn how to conduct himself under such circumstances he cannot rely upon books; he cannot depend upon his natural good sense and resourcefulness. "Combat exercises" are a part of training that has been neglected. They must be practiced by every force of cavalry, no matter how small. To prevent collisions, however, it must be possible to bring the horses of the command to a halt from a gallop quickly; and the men must be good riders.

#### **Training the Cavalryman**

But say some, long training and long experience are necessary to make a trooper. We stubbornly persist in this statement in face of the evidence of all wars, that after the first collision of armies only a short time elapses before large replacements of new horses and new men are necessary in the cavalry. It was not the long training of cavalry that made the troops of Forrest and Morgan, Custer and Sheridan so formidable. It was good leadership. There are many poor as well as good leaders among cavalry officers.

Many men, infantry and cavalry, will never make good riders, but it is astonishing how many infantrymen take to the horse when called upon to do so. Upon several occasions I have had to convert infantry into cavalry. In 1916 near Brownsville, the Richmond, Virginia, "Blues," a battalion which had been infantry for over 100 years, at the demands of the War Department were transformed into cavalry. After three weeks' drill they participated in a maneuver of ten days and nights, a maneuver remarkable for the distances traversed and the fatigues encountered. At West Point the cadet, before he graduates, rides one hundred sixty hours. Take a doughboy who is a good



shot with a rifle, who knows his infantry drill, who is disciplined and who can love a horse, give him one hundred sixty hours of mounted training and you have gone a long way towards having an efficient mounted rifleman. The West Point yearling who has had sixty hours of riding thinks he is a horseman. In two weeks of track riding, in the saddle five hours per day, total sixty hours, the recruit may be made fit for incorporation in the troop.

No nation maintains in peace enough cavalry for war. With us, in war not only must our small regiments be enlarged but many new regiments be formed. Half of the armed forces of our neighbor to the south is cavalry. And why? Because when distances are great, population is sparse, and supplies are difficult to obtain, fast moving forces must be used to obtain advantage. If the enemy is mounted it will not avail us to chase him with infantry. It is conceivable that in a war on this continent we might be obliged to mount a third or more of our infantry. Fortunately, with fifteen million horses in the United States, we are in a position to do it.

It is not at all unlikely that if this were done, and a large portion of our infantry were to be converted into mounted riflemen, it would be found more convenient to adopt our old Regiment of twelve troops, which has done so much good work in the past. Indeed the passage from the infantry regiment of three battalions of four companies each into the cavalry regiment of three squadrons of four troops each, would be effected with little friction. It is questionable further if our new European regiment is as efficient for the work to be done on this continent as the old American regiment. A troop of sixty-five to seventy-five men has the proper proportion of men to officers, and is not too bulky to be under control. In column of twos one hundred men stretch an eighth of a mile, in column of files a quarter of a mile. A troop of seventy-five men is a proper administration unit. The small troop has always been used in our army with good results.

#### **The Rifle is the Principal Weapon**

The British drill regulations after the Boer War announced "The rifle is the principal weapon of cavalry." This dictum holds as good today as then. Do we not in the cavalry attach too much importance to the machine gun and the machine rifle? The reason why the rifle was virtually discarded by some troops in the World War was that few knew how to use it with effect. "Among the blind the one-eyed man is king." In Mexico, the machine gun, in the hands of experts, is of great importance—the reason is the rank and file are poor shots. But give the soldier good musketry training and the machine gun loses its supreme value. In my cavalry brigade I demonstrated time and again that the same number of men using the rifle could make more hits in three minutes on a line of silhouettes at 300 yards than the machine gun platoon.

Incidentally, I demonstrated that the rifle used mounted, is more effective than the pistol. Teach your men to use the rifle mounted—you may run out of pistol ammunition!

As for the *Arme blanche*, give the men a short, light machete-like cutting and thrusting weapon. Nothing is to be gained by extreme length. The Romans conquered while their swords were short. With cavalry charging against cavalry determination and speed means much; the length of the weapon, little. The cavalryman who relies on the length of his weapon does not wish to close. As for a ponderous stickler like our present sword it will be discarded on the wayside when our horses get thin. The useful light machete would be preserved by the soldier for service in camp, and on the rare occasions of the charge against cavalry it will make good, as it did in Cuba.

The rifle is the "principal weapon." But mark this point, neither infantry nor cavalry are fit for war unless they can shoot with accuracy. This fitness, by present methods of training, is, for new troops, difficult to obtain. By the slow process laid down in firing regulations, months are required. The ranges demanded are difficult to obtain, and when obtained will qualify only a few troops at a time. To meet this exigency I devised special course "B," a miniature target course, published in the Musketry regulations of 1903. In 1911, in an emergency, I put four hundred twenty-nine recruits through the course, two weeks' intensive aiming and position drill, five days' firing, one hundred seventy shots. At the conclusion of the course a test showed their accuracy at the regular skirmish run, was half that of sharpshooters. In this course the target "ranges" are in the camp, and a thousand or more men can fire at the same time.

Much time is now wasted in long range firing. The apparent dimensions of a target at one thousand yards, in height and breadth, are one-tenth of the apparent dimensions of the same target at one hundred yards. That is, the apparent area is as one to one hundred. The target is thus over one hundred times harder to hit, there are one hundred times as many misses. The killing is done at the short ranges.

A soldier who can hit the eight-inch bullseye reasonably often at a range of two hundred yards is a first-class shot. To make his fire in battle effective at the longer ranges, all that is necessary is to require him to raise the leaf of his rear sight. For the same reason a soldier who at fifty feet can hit the three-quarter-inch bullseye of the miniature (simulated) target reasonably often, is fit for battle. But this practice must be conducted with service ammunition so that the soldier will become accustomed to the recoil and noise.

In preparing training schedules for war it must be remembered that time is of supreme importance. Every practicable method should be utilized for abridging the time provided the training is not endangered. One great difficulty encountered in raising new cavalry is that the horses are new, untrained, fractious, and that the men have not yet learned to ride. The only remedy for this is to cut down the feed of the horses. As soon as the men have obtained some confidence in the saddle, let the horses feel their oats!

### **Cavalry, Airplanes and Tanks**

There are many popular delusions now current about cavalry, which have to be combated. One of these is that airplanes have made cavalry less necessary for exploration and reconnaissance. As a matter of fact, the army which dominates the air (which would always be the case with us in this hemisphere), can not only protect its cavalry from being bombed by the enemy, but is able to make the exploration of our cavalry more efficient by transmitting information of the movements of the enemy's main columns, thus enabling our cavalry to oppose them. Thus flanking movements like Kluck's, before the battle of the Marne, might have been greatly delayed by an efficient force of mounted riflemen.

These critics also lose sight of the fact that at night or in weather of poor visibility, airplanes, for reconnoitering, are valueless.

Some claim that cavalry is too expensive. It is probable that in this country, where the infantryman costs almost one thousand dollars per year, the extra cost of the upkeep of the horse is less than one-fifth of that of the man.

Some claim that motor trucks, transporting infantry swiftly, will afford a means of dispensing with mounted riflemen. In the Brownsville District in 1916, I discovered that trucks moving through a close country will have to be preceded and protected by cavalry, else they will be held up and captured by the cavalry of the enemy. Motorcycles I found were useless to scout in advance, since they could not move off the road.

Still others make the point that tanks will take the place of cavalry. Leaving out the fact that tanks have great difficulty in going through woods or over rocky hills and mountains, or in crossing rivers, we may say that tanks are more liable to help cavalry than displace that arm. As at Cambria, they may, in great battles, open a passage for the cavalry through the enemy's center. They are, as the French call them, "cars of assault" and are best suited for that purpose. But even in that connection, a battle with tanks on both sides has not yet been staged or apparently even studied. But the idea of displacing cavalry with machines is preposterous.

Since the coming of the breech-loader and since the Cavalryman has become the mounted rifleman, his value has enormously increased. While he is ready mounted to fight cavalry, he is now like an infantryman with seven-league boots; when dismounted, formidable as infantry, man to man; when mounted, a danger to the enemy's flank, his rear, his communications, his depots of supplies, his outlying detachments. The rifle is his principal arm. Mobility, ability to strike at a distance is his supreme, his unique, value.

# Employment of Machine Guns

By LIEUT. WILLIAM P. CAMPBELL, 7th Cavalry

THE combat employment of a military weapon is based primarily on its characteristics. Consequently it is necessary to know its powers and limitations to understand its tactical use. Machine guns have certain peculiarities possessed by no other weapon; these make them particularly suitable for employment with cavalry.

In discussing the use of machine guns, certain principles laid down in the *Employment of Cavalry* should be kept in mind, viz.:

1. Cavalry's mobile armament may secure the power of movement by diminishing enemy fire.
2. The proper employment of fire power will always aid the success of mounted combat.
3. Rapid movement and fire usually go together.
4. Mounted and dismounted action should be supported by fire power whenever necessary.
5. The characteristic action of cavalry is rapid mounted movement supported by effective and intense fire.

From these principles it is seen that machine guns must and do fulfill certain requirements, viz.: mobility, rapidity in going in and out of action, flexibility of fire, ease of control, sustained intense fire power of great volume, all around traverse, and direct as well as indirect fire.

## General Considerations

*Mobility*—Cavalry machine guns, in pack and properly handled, can go wherever the units to which they are attached go, and do not reduce their mobility. However, when the guns are unpacked and advanced by hand—an exceptional procedure for cavalry machine guns—the rate of march is maintained with great difficulty. In any attack where the fire of machine guns is necessary, they will have time to occupy firing positions while the cavalry maneuvers to the line of mounted departure. This emphasizes the necessity on the part of cavalry commanders of giving early warning to their machine-gun commanders and thoroughly acquainting them with the cavalry plan of action.

*Concealment*—In pack, either at a halt or in motion, machine guns are exceedingly vulnerable. Thus their place in column should be such that their intense fire power can be made quickly available, although far enough back to avoid surprise by small arms fire. Invulnerability will depend largely on invisibility. By reason of its small personnel (only six square feet are required for gun and crew), the machine gun can use the slightest cover and thus escape being seen by the enemy. Hence the possibilities for surprise effect are great. Since but little cover is required for concealment, a difficult target is presented. These characteristics make machine guns most valuable in cramped localities where sufficient fire power by other means is not feasible.

*Mount*—It is the fixed mount (tripod) that places the machine gun in a class distinct from other automatic weapons. This tripod makes the machine gun

the only cavalry weapon capable of either direct or indirect accurate long-range fire, and the only one which can conquer darkness, smoke, fog, and rain. It allows a complete horizontal and all necessary vertical traverse; allows fire to be switched from target to target without change of position; simplifies adjustment and control of fire; is applicable to moving targets; reduces the human factor in firing; denies areas to the enemy, and permits efficient fire to the extreme effective range of small arms ammunition.

*Fire*—The principal characteristic of the machine gun is its ability to produce a large volume of rapid and sustained fire. Fire is its only type of action. Such distinctive features as rapid production, large volume, sustained fire, and quick ability to register on a target, are of great importance to mounted combat, as cavalry action requires maximum fire support developed in a minimum of time. The correct application of fire embraces the rate of fire, the trajectory, and the resultant shot group.

Mechanically, the machine gun is capable of a cyclic rate of fire of 500 rounds per minute. The Browning Machine Gun has fired 20,000 rounds in less than 45 minutes with but three stoppages, and has fired 39,500 rounds without a breakage. When the gun is laid, a burst of from 5 to 8 shots per second can be placed on a given area. However, the average rate of fire varies from 100 to 250 rounds per minute. With a well-trained troop moving at a gallop, all eight guns can be placed in action in less than 30 seconds.

The cone of fire is narrow, dense, and deep, which facilitates observation of strike and adjustment. As the fire can be accurately and quickly adjusted, machine guns are of great value in a cavalry action, because the period for any necessary fire support is short. Due to the concentrated cone of fire, it should be employed against deep, narrow targets whenever possible. Therefore, seek to obtain oblique or enfilade fire at all times.

Because of the effectiveness and intensity of machine-gun fire, a greater portion of the rifle troops are permitted to engage in the fire fight or to act mounted. In mounted attacks there must be detailed coordination between the fire units and the maneuver elements—extreme team work is necessary—control of fire must be absolute. These requisites are practicable with machine guns as their fire is concentrated in the hands of one man. Surprise effect, so essential to cavalry action, is easily gained.

*Morale*—A sudden burst of rapid, well-aimed fire from a concealed position, at an opportune moment, produces a most disheartening and demoralizing effect on the enemy. Troops fear machine-gun fire more than anything else on the battle field. The regular machine-like crack of machine guns lowers the morale of the enemy and raises our morale by instilling in us a certain sense of security.

#### **General Principles of Machine Gun Tactics**

No matter how great the cavalry commander's interest in machine guns and his dependence on them, much must be left to the initiative of the machine-gun commander. For this reason it is important to outline certain general principles for the employment of machine guns. These will insure their constant readiness

to resume the offensive under all conditions, which alone promises decisive victory.

Machine guns act by fire alone, so are incapable of independent action. They prepare an offensive movement or repulse an attack, but cannot themselves gain ground. Use them to assist forward movements, to aid in seizing and holding positions, to cover flank attacks and the retirement of flanking detachments when driven back. Although superiority of fire is essential for positive



An Excellent Hasty Machine Gun Position in Defense of a Village

results, it is a principle that only the necessary number of guns to accomplish any task should be employed. As far back as the Franco-Prussian War, Von Moltke emphasized "beware of useless concentration; concentrate only for a definite purpose, a decisive battle." It is also desirable that the commander of the force should at all times have at his disposal reserve machine guns for meeting the unforeseen contingencies of battle.

Machine guns should be constantly employed in pairs (Cavalry Machine Gun Section). Even breaking up the platoon reduces combat efficiency because there are then four guns without an officer's supervision. The cavalry commander decides where and when the machine guns are to be employed, but the machine-gun commander should be allowed to select the means and methods to accomplish his mission. Although there should be a definite responsibility fixed on the machine-gun commander, the role assigned his unit should be given broadly, leaving to the machine-gun commander great initiative.

*Reconnaissance*—To insure their effective employment, machine-gun units must obtain for themselves special reconnaissance information in addition to the



general data furnished by troops assigned such missions. The machine-gun commander must be constantly familiar with the situation to his front. He usually makes a personal reconnaissance with the cavalry commander before entering the action and is then able to order a logical deployment of his units exactly in accordance with the desires of the commander of the force. His reconnaissance must continue during and after the action.

On the march, during the approach or withdrawal, and previous to combat, the machine-gun commander, in order to obtain immediate information of every situation, rides with the commander of the rifle troops to which the machine guns are attached. The machine-gun commander should know:

1. The probable intention and course of action of the enemy; the location and disposition of his troops, their size and character; the enemy's equipment and morale; and his method of employing machine guns as well as his machine-gun localities and strong points.
2. The general character of the terrain such as the location of high ground, hills, ridges, ravines, ditches, stream beds, bridges, woods, roads, wire, and covered approaches.
3. Possible location for machine-gun lead animals.
4. Whether the terrain favors mounted or dismounted combat.
5. Probable positions of enemy observation posts, front lines, supports, and reserves.

In defense, the machine-gun commander should note the existence of natural obstacles, and possible places for constructing dummy guns; the best defensive positions for machine guns; possible approaches and routes of withdrawal; fields of fire; likely avenues of enemy approach and ground over which he might attack; areas of concentration for reserves; and localities which afford good cover for enemy machine guns when firing. After making his reconnaissance and locating his gun positions, the machine-gun commander should forward the cavalry commander a sketch showing:

1. The location of each gun.
2. The sector of fire of each gun.
3. The principal targets of each gun.
4. Adjoining units.

*Positions*—Here again the orders given machine guns—firing positions—should be in general terms because frequently they may render more effective support from adjoining zones and better positions usually will be discovered after a more careful reconnaissance. It should be emphasized that the first consideration in occupying firing positions is to get the guns into the positions without exposing them to enemy fire or observation. The only invariable rule is to post the guns so that they can accomplish the mission assigned.

The weight of machine guns should gravitate toward the flanks from where they can combine cross fire to the front and protection of the flanks. Our Training Regulations state that the ideal positions for machine guns in supporting an attack are on commanding ground, preferably to the flank, which permits overhead fire. On the other hand, the Germans taught to the end of the World War that, "commanding points will not be used." In a document on "German Principles of Elastic Defense," Ludendorff writes that it is even unwise to place

guns on narrow ridges because they always draw fire and are difficult to hold. Von Thær, a well-known German General Staff officer in the World War, taught that machine guns should be concealed on slopes and in hollows, and never placed on commanding ground.

Positions on reverse slopes should be avoided so as to obtain direct fire unless enemy machine guns and artillery make forward slopes untenable. Because of the vulnerability of lead animals and the necessity of ammunition supply, all positions should have covered approaches. Woods, trees, crops, banks of rivers, canals, railways, ditches, hedges, debris, mounds of earth, cuts and folds in the ground afford good positions and covered lines of approach. When frontal fire is not necessary nor possible, guns may be sited behind oblique ravines, knolls and slopes. Wood piles, planks and logs may be used for concealment. During village fighting, windows, doors, and holes in roofs may be



**A British Machine Gunner During World War Harassing Enemy Supports**

used as gun positions, provided the guns are set well back in the shadows. Consequently, guns should command these same enemy positions as well as all cross streets.

Avoid places easy to recognize such as cross roads, single objects, spots easily located on the map, conspicuous heights, thickets, knolls and buildings. Machine Gun Training Regulations give the following requirements for perfect machine-gun positions:

1. Defiladed approaches for the guns to within close or effective range of target.
2. Command of enemy positions and good fields of fire.
3. Permit direct flanking fire on the target, continuity of fire with neighboring guns, and overhead fire if required.
4. Good observation of fire on enemy position.

5. Cover from view and if possible from fire.
6. Good alternative positions, usually to a flank, for occupation if the guns are located by artillery.
7. Facility of movement and communication to the front, flank, and rear.
8. Defiladed approaches and good cover for lead animals.

*Targets*—Machine-gun targets are classified according to their nature as infantry, cavalry, artillery, tanks, etc.; and with reference to their movement as fixed or stationary (trenches, buildings, machine guns in position), transient (infantry lines, observation and staff parties), and moving (cavalry at fast gaits, small bodies of mounted men, trucks, motor cars, artillery on the move, marching infantry, wagon trains). The machine gun has no destructive power and is ineffective against materiel. Favorable targets are deep and dense, with relation to the line of fire, such as columns, or lines taken in enfilade. Unfavorable ones are broad and shallow such as frontal fire on a skirmish line. In this case the long narrow beaten zone of fire is not utilized.

Infantry halted or in close order march formation presents a remunerative target, but in attack its waves must be taken in flank. Dismounted cavalry is engaged the same as infantry, but mounted cavalry should be fired upon whenever and wherever it appears, provided the range and tactical situation permit. It is most vulnerable at a halt and in close formations, but harassing machine-gun fire is extremely annoying, creates confusion, and disorder, and causes premature deployment. This last may even disrupt the enemy plan of action. Cavalry and artillery lead animals offer superior machine-gun fire objectives. There will be few opportunities to engage artillery, only when marching in limbered formation, at the moment of occupations of position, and upon reconnaissance parties. However, there was a case during the World War when a Canadian Machine Gun Company almost completely annihilated a battery of German Horse Artillery going into position.

Against tanks and armored cars machine-gun fire is ineffective, but barricades and obstacles may be placed in roads, and these swept by fire to halt their progress. Enemy machine guns are not good targets, but their personnel is profitable. Planes, motor cars, trucks, reconnaissance groups, staff parties, signalmen and observers are fleeting but vulnerable. Bridges, trenches, buildings, obstacles and woods are themselves unremunerative, but their exits are valuable where the enemy desires to cross or emerge from them.

*Communication*—The necessity of maintaining lines of information between the different echelons of a somewhat mixed command—communications within the machine-gun unit and with the troops to whom the machine guns are attached—must be realized. When machine guns and cavalry act together, it is of vital importance. The responsibility therefor rests with the machine-gun commander, and is carried out by his limited headquarters personnel. However, if the machine-gun commander loses touch with the cavalry commander, the latter should take effective and immediate measures to regain his liaison.

The means of communication provided in machine-gun organizations are as follows:

1. The machine-gun troop—telephone, very pistol, panels, and messenger.
2. The machine-gun platoon—very pistol, and messenger.
3. In addition, machine-gun officers and non-commissioned officers will find the semaphore of inestimable value for short-range communication, although it is not required by regulations. The effectiveness of the support given by machine guns to rapidly moving rifle units and to the charge is largely dependent upon simple means of communication.

*Ammunition Supply*—Great expenditures of ammunition, particularly with machine guns, are required by the conditions of modern warfare. Commanders of all ranks must see that the necessary economy is constantly exercised and that all possible steps are taken to insure timely replenishments, because there must be no anxiety as to ammunition supply on the part of troops engaged in battle. This is especially true of machine gun organizations, as they fight by fire alone, and must be absolutely sure of their ammunition supply to render efficient support to rifle and shock units.

The amount of ammunition required by machine guns depends on varied factors, such as the number of guns to be employed, the duration of the engagement, the rate of fire, the amount of supporting artillery fire used, and whether the machine guns are to lay down any harassing or interdictory fire. The machine gun troop carries 3,000 rounds per gun in pack (enough for 30 minutes' fire at 100 rounds per minute) and the remainder in the combat wagon. Belt filling machines, additional water, and extra oil (one-half pint per day required per gun under war conditions) also are carried in the combat wagon. So, machine gun units must have their combat wagons close at hand. When operating with rifle units, machine gun organizations habitually will be accompanied by their combat wagons, which then come under the command of the Supply Officer of the rifle unit to which attached. However, before and during an engagement it often will be advantageous to place the machine gun combat wagons under the immediate control of the machine gun commander. These wagons should contain the maximum possible amount of ammunition consistent with the mission, and they should be pushed as far forward as cover will permit, because the packs are refilled at the combat wagons. This forward movement of ammunition is especially difficult and requires strict supervision. Only in cases where the ammunition supply is in certain danger of collapse should reserve machine gun platoons be used as carriers for platoons in action. At such times the machine gun commander is authorized to request additional men as carriers from the commander of troops.

Although dumps may be established under a few obvious conditions, such as a determined holding attack, they must be avoided, as a rule, because they tend to immobilize the cavalry by delay and cause the loss of ammunition in case a rapid withdrawal is ordered. Both the cavalry and machine gun commanders must consider the following in reference to machine gun ammunition supply:

1. The amount of ammunition needed immediately, and the amount for future actions.

2. The farthest point ammunition can be carried by pack and the distance it must be carried by hand.

3. The character of the ground to be crossed, number of men necessary and method to be used.

4. Location of combat wagons.

If the above general principles are departed from, as they may be in exceptional cases, the sole justification must be an affirmative answer to the question: "Does the result hoped for justify the expenditure of ammunition?"

*Smoke*—Machine guns, with their means of indirect laying, are the only cavalry weapons that can effectively penetrate a smoke screen. If the enemy suddenly puts a smoke screen across his front during a bombardment, it may be assumed that he is forming for an attack under cover of the smoke. Then



**An improvised method of carrying the Browning Machine Gun, illustrating its possible use with the pack horse in motion, in an extremely hasty withdrawal. The gun has been fired from this emergency moving position with fair results.**

the machine guns would put all their fire on the smoke screen. But if such a screen is put down by the enemy without any artillery preparation, it should not necessarily be taken as an indication of an enemy attack, because smoke screens are used often to conceal reliefs or other movements, the arrival of armored cars, or tanks, and to locate hostile machine guns by drawing their fire.

*Machine Gun Lead Animals*—Lead animals mean even more to machine gun units than horses do to cavalry troops, because a cavalryman can advance without his mount, but machine guns are almost immobile without their pack horses. Of course, the tactical situation influences the position of machine gun lead animals, but the cavalry commander should allow them to be brought as close to the firing position as enemy observation, enemy fire, and local cover will permit. With the drivers leading the gun and ammunition horses, it is surprising how far forward they can be taken without being exposed. In order to insure a rapid withdrawal, it is necessary for machine gun lead horses to be

much nearer in a delaying or rear guard action than in a stubborn defense when there may be artillery shelling by the enemy.

Machine gun lead animals should be near roads when possible and always to either flank of the guns instead of directly in rear to avoid overs from concentrated fire on the machine gun positions. Banks of streams, ravines, deep washes, steep reverse slopes, fills, quarries, buildings, and woods afford excellent protection (the latter especially in case of enemy aerial activity). In this connection it must be remembered that machine guns draw artillery fire. In general, each machine gun platoon furnishes local protection for its own lead animals, but when in an isolated position, an escort (which would have to be drawn from the cavalry) might be necessary.

Visual or voice communication is essential and habitual between guns and lead animals, because the machine guns are never moved by hand except for very slight changes of position. The length of time required for a machine gun to advance to a new position, and the length of time it may remain in action when withdrawal is contemplated, is dependent largely on the distance the lead animals are from the guns.

#### Security

*Advance Guard*—It is the business of a cavalry advance guard to take aggressive and bold action, to grip, hold, and outflank the enemy rapidly to compel him to reveal his disposition. These functions make it necessary that great fire power be available when required. Machine guns are well suited to such a mission, because of their rapidity in opening a large volume of fire, long-range fire power, mobility, and ease of control. These characteristics allow the advance guard to hold ground already gained, to develop the enemy's strength, to delay him, to render him cautious, to cause him to deploy at long range, and to break off an action suddenly without bringing on a general engagement.

The mission of the machine guns with an advance guard may be to:

1. Force a premature deployment of enemy forces.
2. Delay or prevent enemy movement.
3. Assist in driving off hostile detachments.
4. Hold high ground, good defensive positions, cover important approaches, bridges, defiles, and other essential terrain features.
5. Lay down bands of fire where needed and protect weak flanks.
6. Cover a deployment of the main body by holding the enemy on a wide front.
7. Assist in an attack.
8. Take part in fire pursuit of enemy forces.
9. Cover withdrawal of advance guard when not supported by main body.

The factors which determine the number of machine guns assigned to an advance guard are the nature of the terrain and the proximity and character of the resistance expected. When the country is flat or densely wooded, the proportion of guns with the advance guard is less than where the country is rolling and affords good opportunities for flanking and overhead fire. If contact is expected early there should be at least a platoon with the advance guard squadron or a section with an advance guard troop. The advance guard in general will have relatively the same proportion of machine guns as the main body.



The machine gun commander marches with the advance guard commander, although the machine gun unit ordinarily will march with the rearmost element of the advance guard. Or in case a machine gun troop is assigned to a squadron on advance guard duty, one platoon may march with the support and two with the reserve. This rearward position of machine guns in an advance guard assures:

1. Greater security to the guns.
2. Gives greater latitude in selecting firing positions.
3. Makes the approach to firing positions safer and easier.

If time permits, the advance guard machine guns should be assigned a definite role in the attack. They should direct their fire on points in the enemy's rear as soon as their fire becomes masked by the advance. If the advance guard succeeds in dislodging the enemy from his position, the machine guns should be moved forward by bounds to join in the fire pursuit and to assist in repelling hostile counter attacks.

*Flank Guard*—The same general principles relative to the use of machine guns with advance guards apply to their employment in flank guards. Their mission remains the same, and their importance is equally as great. The proportion of machine guns to attach is determined by the intended conduct of the flank guard in case the enemy is met—the more defensive the action, the more guns should be added (depending, of course, on the size of the flank guard and on the nature of the terrain). The position of the flank guard machine guns in column is determined by the direction of the expected enemy—forward if the attack is expected from the front, and to the rear if the attack is expected from that direction. The most important use of machine guns with flank guards is when they form part of a cavalry flank guard protecting the flanks of infantry in battle.

*Rear Guards*—In no phase of warfare are machine guns more valuable than during a retreat. Their mobility combined with ability to force formed columns of the enemy to deploy at long ranges, to resist an attack, to deny the enemy bridges, defiles, and other critical points in the route of advance, to support counter-attacks, and to cover a withdrawal make them of inestimable value to a rear guard. Their proportion should be large, depending only on the number of guns available in the command and the tactical situation.

As a rear guard retires by echelons, which are about equal in strength, machine guns are usually equally distributed in those echelons. A wide and deep field of fire should be secured, and all roads and approaches over which the enemy may advance must be covered. To secure surprise effect, it will be desirable in many cases to withhold fire until the enemy is at close range. Successive positions should be selected from 1,000 to 2,000 yards apart when there is any choice. The Rear Guard Commander should detail a small escort, three to six cavalymen per gun, for the rear guard machine guns to insure their security and their constant effectiveness.

*Outposts*—The principles governing the employment of machine guns in outpost are the same as those governing their use in defense. Their disposition

depends on the size of the force, the intentions of the commander, the proximity of the enemy, the features of the terrain, and the nature of the cavalry outpost. Machine guns are an ideal resisting weapon in outposts because of their mobility, the rapidity with which they can be moved from place to place, their adaptability to night firing, and their ease of concealment.

Usually the greater number of guns are assigned to the supports and placed near the line of resistance, but some may be with the reserve. Ordinarily they are not assigned to outguards, although important pickets or detached posts may require them. Their missions should be to:

1. Command all approaches, roads, defiles, etc.
2. Sweep all ground between the outguards.
3. Provide long-range harassing fire.
4. Give anti-aircraft protection.
5. Protect front and flanks of supports.

Of most importance is the fact that the proper use of machine guns in outposts permits the employment of the fewest possible number of men.

#### **Screening**

Both offensive and defensive cavalry screening operations are assisted greatly by machine guns. Von Bernhardt teaches that, "The principal task of the offensive screen is to defeat the hostile cavalry; and for this object all available force must be concentrated." Consequently, machine guns, the cavalry's chief fire weapon, should form part of this force, because they relieve a large portion of the rifle units for reconnoitering and observing to the front, with their rapid volume of fire assist forward movements, and form strong covering positions that can be used as rallying points in case the forward elements are driven in.

Of the defensive screen, Von Bernhardt says: "Of great importance, first and foremost, is the nature of the obstacles on which it is based—water courses, canals, bridges, and woods." Machine guns sited for direct fire to cover these obstacles and all other avenues of approach will greatly stiffen the defense. In case of only a few guns they should be held in rear as a mobile reserve and ordered quickly to any threatened point. When cover is not available all guns should be prepared to do anti-aircraft firing, should fire on enemy bodies at long ranges, and employ harassing fire often.

#### **Reconnaissance**

In both strategical and tactical reconnaissance machine guns can be used to great advantage. They should be attached in the proportion of one platoon (4 guns) to a squadron. In case the enemy is encountered their support may be decisive. The mere sound of fire from machine guns may be sufficient to scare off small enemy detachments which are incapable of resisting a determined attack. The usual principle of fire and movement governs the use of machine guns with reconnaissance detachments. Their missions are to:

1. Assist in laying ambushes.
2. Assist in driving off minor enemy patrols.
3. Assist in protecting detachment in emergency.
4. Support mounted and dismounted attacks.

5. Draw enemy's attention to one point, while information is gained at another.

### Raids

Machine guns are as important to this method of semi-independent warfare as to reconnoitering duty, and are similarly employed. In advancing, the raiding force should utilize the accurate long-range fire of the machine guns, then when the destination is reached, machine guns can be posted to hold the enemy at a distance, while mounted action completes the mission of destruction or capture. The conduct of the guns with raiding detachments is as follows:

1. When in camp, use the machine guns in outpost.
2. During the advance, avoid firing unless attacked.
3. Fire on planes only in self-defense.
4. When supporting rifle units, cooperate completely, so that the cavalry can accomplish its mission.
5. When withdrawing, engage all enemy targets in active pursuit.



Anti-aircraft machine gun protection for a wagon train while on the march.

### Attack and Defense of Convoys

Both motor and wagon convoys are attacked and defended by cavalry with machine guns attached. Fire on this class of target should be opened by surprise, preferably with part of the machine guns attacking the head of the column and others firing on the tail of the convoy simultaneously. In case the convoy has a mounted escort, the rifle units engage it while the machine guns are sweeping the convoy with dense fire. In defense, unless there is a large number of guns, they should be kept with the main body of the train rather than frittering them away as part of security units. If available, a platoon of machine guns should be assigned to the advance guard for the purpose of holding critical points until the column passes, and the remainder placed at the head and tail of the convoy proper. With a long convoy it is well to place a section or platoon

of machine guns in the center. While in movement one or two guns should be mounted always in wagon or truck bodies for anti-aircraft defense. When the convoy camps, the machine guns are used as part of the outpost or placed at the four corners of the park.

#### **Machine Guns In Defense**

Defensive tactics are basically the tactics of holding wide fronts with relatively weak forces. Machine guns constitute the framework of any cavalry defense because they give rigidity to particular points in the defensive organization by the power of their fire and give elasticity to the whole structure by their ability to fight in any direction. When time is available to plan the occupation of a position the disposition of the machine guns should be made first and the dismounted rifle units built up around them. Machine guns should be placed and sited so as to cover the entire front, especially the flanks and faces of combat groups, strong points, and centers of resistance with a series of crossing bands of fire. Alternate emplacements for each gun are selected and prepared so as to accommodate quick changes of position. Dummy emplacements are constructed and the work partially concealed.

The missions of machine guns in a cavalry defense may be:

1. To economize rifle units.
2. To protect the flanks of the position.
3. To sweep with long-range fire important routes of approach.
4. To interdict enemy concentration points and put over harassing fire day and night.
5. To stop minor attacks and check and disorganize main attacks.
6. To defend the battle position and limit penetration.
7. To put down preparatory fire and support counter attacks.
8. To cover a withdrawal and act as a mobile reserve of fire power.

In defense the machine gun platoon is the basis of control, while the guns are divided into forward and rear guns. Forward guns are those on important points to the front and are laid primarily for covering the front lines with bands of fire. They employ direct fire. Rear guns are those placed on commanding ground in the rear of the battle position. They are used to fire standing barrages and concentrations on particular targets or groups of targets, and do anti-aircraft work. Anti-aircraft sections or platoons should be placed about the defensive positions in the form of a big triangle, 500-1,000 yards to a side, the guns at each apex. This plan insures anti-aircraft protection in all directions. The advance of the enemy is the signal for all guns to open fire at maximum practicable rates. As large bursts betray the gun position by sound, smoke clouds, and muzzle blasts, the use of small bursts is habitual except when attacked mounted. Then all guns open with the maximum rate of fire.

#### **Machine Guns In Delaying Actions**

Any force whose mission it is to delay the enemy should be liberally supplied with machine guns. In numerous German and Austrian tactical studies, it is stated that Allied machine guns formed the chief impediment to their progress during attacks. Here should be emphasized the importance of deliberate observed harassing machine gun fire, and of methodical annihilating fire.

When it is intended to break off before serious losses are sustained, the following principles apply to machine guns:

1. Maximum fire power must be obtained when the enemy first appears. Fields of fire at medium and long ranges are necessary.
2. Distribution in depth is not important, but flanks must not be neglected.
3. Wide intervals between guns is permissible in order to deceive the enemy as to real strength. Such deception is also aided by use of alternate positions.
4. Main avenues of enemy approach should be covered, especially narrow areas where the enemy must cross, such as bridges, defiles, etc.
5. Machine gun lead animals should be held close with covered routes of withdrawal available. Retirement is by bounds, one platoon or section covering the withdrawal of another. New positions should be reconnoitered before withdrawal and should be from 600 to 1,400 yards to the rear.
6. While the sacrifice of guns is never desirable, the defense should be bold and determined.

When delaying actions must continue for a certain length of time regardless of losses, the considerations shown below should govern the conduct of the machine guns:

1. Certain means of limiting the success of an enemy who has made a partial advance are the employment of concealed machine guns in depth and in checkerboard positions.
2. Depth and the possibility of counter attack call for a certain amount of overhead fire.
3. Close defense by a series of cross bands of fire should be provided.
4. Small rifle escorts (3 to 6 men per gun) should be left with each machine gun section of first line troops.
5. Routes of withdrawal, though desirable, are not of such great importance.

#### **Machine Guns in Withdrawals**

In a tactical withdrawal, the majority of the machine guns should be attached to the front line troops, as they cover the whole movement. Rear machine guns should be assigned to support the withdrawal of the front line troops and guns. Here again effort is directed toward securing medium and long-range fire on the enemy approaches, particularly roads, and on the vacated positions. In studying holding actions and withdrawals, the Germans maintain that, "The superiority of an active defense, carried out in the spirit of an offense, should be strongly emphasized. On the other hand, there are but few points on the ground which must be held at all costs. We have been obliged to learn to adapt ourselves to the inevitable loss of a number of positions, which we considered it absolutely indispensable to hold, after we had incurred heavy casualties to no purpose. The morale of the troops will never be lowered in such cases by a voluntary withdrawal at the right time in accordance with orders, if they understand the reason for such a step, while the obstinate retention of positions, which have obviously become unfavorable to us, must destroy their confidence in their commanders."

#### **Machine Guns in Dismounted Attack**

Attacks succeed by a proper combination of fire and movement, other things being equal. Enemy strong points are neutralized or immobilized by fire and

their weak points broken through by movement. In the dismounted attack the commander should be certain that the machine gun commander understands the special situation and the plan of action, and must give him all available information of the enemy, his position, strong points, frontage, depth, and flanks, so that the machine guns can be used to best advantage.

In commands the size of brigades and larger, machine guns are divided into forward and rear guns, which are employed as in the defense. The former furnish close fire support by direct fire, and the latter direct or indirect long-range covering fire. The usual number of guns allotted to a cavalry regiment is the machine gun troop of eight guns (in addition to the anti-tank platoon) and the the cavalry squadron the platoon of four guns. The missions of these guns with regiments and smaller units are to:

1. Assist rifle units in obtaining superiority of fire.
2. Neutralize woods, villages, and other strong points.
3. Concentrate on targets holding up the attack.
4. Fill gaps in the line with fire.



**An effective Machine Gun position with a strong detached post near a farm house.**

5. Consolidate positions won.
6. Pursue enemy with fire.
7. Cover reorganization of rifle units and economize use of riflemen.
8. Repel counter attack and cover a possible withdrawal.

The initial order for the attack should include: machine gun tasks during fire attack and the assault, tasks upon the capture of the position, and tasks for



the action subsequent to the assault. Each machine gun unit (section, platoon, troop) should be given a definite mission and target. All machine guns are charged with anti-aircraft fire, but they do not cease firing on important ground targets to attack isolated planes. The form of fire—standing barrage, rolling barrage, concentrations, overhead, etc.—depends on the plan of action, the number of guns available, the enemy's dispositions, and the visibility and the terrain. When near the enemy, machine guns move forward by bounds by sections (2 guns) or platoons (4 guns). They can be pushed out under cover of darkness, fog, smoke, or bombardment, and establish themselves in long grass, ditches, shell holes, etc. By concentrating on hostile strong points and enemy machine guns, they will aid greatly the advance.

### **The Mounted Attack**

In mounted attacks the machine gun should be considered as a pivot of maneuver and every available gun should be in action. An idle machine gun is a waste of power. Von Bernhardt states: "The universal principle must always hold good for cavalry, that when a decisive struggle is in prospect, all possible strength must be concentrated for it." As many guns as the situation will permit should be employed as one unit under one commander. In general, machine guns should never form part of a charge or melee or be sent into a position without previous reconnaissance. However, in large commands, where the immediate objective must be held at all costs, some guns may follow the mounted supports or reserves into position.

*Against Infantry*—Deliberate prepared mounted attacks against infantry require much fire support and good coordination in the employment of fire and maneuver. So, again, the machine gun commander should be informed in detail as to the plan of attack. This plan may include a determined fire preparation followed by a sudden launching of the mounted attack or a sudden opening of fire immediately preceding and accompanying the charge. The former plan is the more important except when surprise is possible. As hostile machine guns are the most serious obstacle to the successful mounted attack, they should be neutralized as soon as possible.

The guns may be placed on one or both flanks of an assault, or on commanding ground in rear for overhead fire. A combination of all three is occasionally possible, depending on the terrain. The employment of machine guns on the extreme outer flank is to be guarded against, as they generally will be able to remain effectively in action longest on the inner flank. It is important that the line of fire be at an angle of 90° from the direction of the assault. When friendly mounted troops are over 1,500 yards from the guns, overhead fire should not be used.

When the machine gun fire is not sufficient it is good practice to push forward machine rifles on the flank farthest away from the assault to within their effective range of the target, usually about midway between the machine guns and the enemy. When the fire is no longer safe, due to the arrival of the assault wave at the enemy position, it may be stopped or lifted to rear areas on

enemy supports. A portion of the guns may be moved rapidly to the ground won while the remainder cover their advance and any further movements of the assault units. If the assault is successful, some guns should follow in immediate pursuit.

*Against Cavalry*—Machine gun tactics used by cavalry against infantry are similar to those employed by cavalry in deliberate actions against cavalry. The machine gun commander should have even more latitude in selecting his gun positions, and the sooner the adoption of a plan of action, the sooner can his fire force the enemy to assume formations favorable to attack by our maneuver elements. The machine gun units should be advanced early, even pushed forward recklessly to within effective range of the enemy, and thus be prepared to keep him at a distance and force him to disclose his strength. Fire should be directed at the enemy reconnoitering parties and at his fire elements, especially when mounted or in pack. On the other hand, machine guns may be concealed so



**A good hasty method of packing machine guns in case gun and tripod hangars are suddenly destroyed.**

as to engage the enemy frontally, while the cavalry attacks the flank; or they may gallop out to a flank and enfilade the enemy, while the cavalry attacks in front. Machine guns are sometimes used to secure the position from which the assault is to be launched or from which the preparatory fire is laid, but it is better to gain these positions under cover and then use the machine gun fire as a surprise.

A maneuver which has proven valuable is for the machine guns in pack to advance behind assault units over a covered area and drop off at selected firing positions, while the cavalry maneuver to a flank attack, assisted by the fire of the guns. Another practicable ruse is to conceal the guns in a position, then have the assault elements draw the hostile cavalry under the fire of the machine guns and deliver the assault while the enemy is at a disadvantage.

*Hastily Prepared Mounted Attacks*—If machine guns are to be successfully used in this type of action, the machine gun commander must have a thorough knowledge of cavalry tactics as well as a complete mastery of the technique of

machine gunnery. There may not be time for any definite instructions to be given the machine guns, and lack of action on their part may result in defeat, while quick fire support on the machine gun commander's own initiative may mean victory. As machine gun units when mounted always march in combat formation to a flank or front and can go into action at short ranges in thirty seconds, careful consideration should be given their use in emergencies.

At times, such as when a cavalry force might decide to cut its way through a numerically superior enemy, the machine guns should remain in pack and maneuver with the supports or reserves. Then they could be used as part of the rear guard. When surprise is possible, full use should be made of machine gun fire action, which may or may not be accompanied by shock. Then the maneuver elements operate against one flank of a column and the machine guns search the head or rear, the maximum effect will be obtained. Should the column wheel to attack the assault units, it will then expose itself to the most deadly machine gun fire—enfilade.

#### **Exploitation of a Success**

In the break through, the duties given machine guns will be to support mounted attacks, prevent threatened counter-attacks, and make impossible an organized enemy retreat. In the pursuit, machine guns may be attached to units in direct pursuit, flank pursuit, and strategical pursuit. Best results are obtained by the machine guns following in rear of the enemy, while the rifle units use their speed to check him from the flanks and heads of his retreating columns. The cavalry may seize tactical points along the enemy's line of retreat, thus causing him to bunch and afford good targets for automatic weapons. While short-range fire should always be sought, long ranges permit pursuing columns greater freedom of action, save casualties from enemy fire, and give more harassing targets. Their chief missions will be surprise attacks against the enemy flanks and overcoming hostile rear guards.

The importance of machine guns as an integral part of cavalry and their employment have been greatly stressed in this article because the Franco-Prussian, the Russo-Turkish, the Manchurian, and the World War have proven that it is no longer possible to employ the cavalry charge unsupported by fire on the modern field of battle. Let us, then, be neither fascinated nor dazzled by the glories of a past that cannot be recalled. On the contrary, we should look for new resources and wider spheres of action, knowing that great achievements are the reward only of hard and assiduous labor. With the spirit of Seydlitz and Stuart to inspire us, we can strive for an even greater cavalry than that developed by our ancestors. May our motto be:

*"Fire and Shock."*

# Machine Guns Against Aircraft

By MAJOR JOHN C. MULLENIX, *Cavalry*

*Formerly Commanding Officer, 1st Machine Gun Troop, The Cavalry School*

MILITARY experience has well determined the appropriate tactical and strategical employment of the various combatant arms. However, under the insatiable thirst of man for scientific progress, new weapons, new defenses, and new agents of destruction are constantly developed. During the World War, a struggle of giants locked in a death grapple in which neither side could muster sufficient force to drive its opponent into the open and there finish him off, the inexorable instinct of self-preservation forced the mental, physical and industrial resources of the contending nations to the limit. Necessity, as ever the "mother of invention," seeking new means of giving successful battle, brought to the hand of the military commander new applications of known weapons and methods, new types of organizations, highly developed instruments of fire power, lethal and obnoxious gases, and the aeroplane. Scientific progress in all of the foregoing agents has made tremendous strides since the World War. This refinement of the art of war must have its inevitable effect on military operations, organization, and tactical methods.

Tactical principles or laws appear to be as immutable as the law of gravitation. Methods, armament, and organization change with scientific invention and equipment, and all arms of the military service must be alive to modern conditions and weapons. The measure of a combatant arm is its ability to fight. The victories of the future, as in the past, will perch upon the banners of the military arms that are properly organized, modernly equipped and armed, and skillfully led in accordance with sound tactical principles. All of the arms must face certain general conditions of the modern battlefield such as hostile aircraft and chemical agents. Each arm will also face conditions that are more or less peculiar to its particular functions, employment and radius of activity. Therefore organization, tactics and equipment should be based upon certain general conditions, taking into consideration the probable employment and radius of operation of the specific arm involved. Cavalry functions as shown (generally) below should therefore govern its organization and armament.

## The Role of Cavalry

1. Security and Information: This includes all types of reconnaissance, advance, flank and rear guards.
2. Covering or Screening: To guard or mask the concentration of armies or the maneuver of units in some phase of the battle or the advance.
3. Seizure of Strategic Locations: Mountain passes, stream crossings, commanding positions.
4. To Defeat The Enemy Cavalry: When the activity of enemy cavalry is such as to interfere seriously with our own forces it must be located and driven from the field.

5. **Delaying Actions:** To delay the enemy as your own force retreats in its attempt to escape. To contain the enemy at one point while your own force attacks him at another point. To harass his troops.

6. **Exploitation of a Success:** Where a gap has been made in the enemy's line, to go through and cut communications, break up liaison between units, and destroy railroads, bridges, etc.

7. **Pursuit:** In case of a severe defeat to an enemy on his entire front to turn the situation into a rout or panic.

8. To assist the army in winning the decision in the main battle. This is the most important and vital use of cavalry.

#### **Necessity for Greater Mobility**

Cavalry, to fulfil the foregoing functions and to meet modern battle conditions must develop its equipment, formations and organization. These factors must be balanced to maintain ample mobility and ample fire power. I believe that both of these vital elements are deficient at the present time and therefore beg leave of the reader to diverge for one moment and make a plea for the radical reduction of the equipment now carried by the cavalryman and his mount. That equipment should be rigidly limited to the articles absolutely necessary to live, move and fight effectively. Future conflict demands the gas mask for horse and man. The carrying of these articles entails more weight. The wearing of them radically reduces mobility. Equipment must be lessened and loads lightened. Mobility will be at a greater premium than it has ever been in the past in order to permit rapid maneuver by ground troops, to offer poor targets to hostile aircraft and also to move certain units into formations and positions suitable to attack low-flying planes. Open formations and use of cover offer some protection, and celerity of movement thus increases in importance. Equipment must be reduced to permit these defensive movements and formations. However, occasions will arise when formations and cover are impracticable to obtain—also when our own aircraft will be unable to protect our columns or bivouacs. Are we therefore to be unable to function—to be at the mercy of hostile planes “strafing” us with bombs and bullets or spraying us with liquid mustard?

#### **The Menace of Hostile Aircraft**

The modern airplane with its fragmentation bombs and machine guns is a factor that must receive attention. The huge gas bombs filled with lethal agents must be considered. However, I believe that the greatest menace of all is the hostile plane spraying liquid mustard. There is no practical method of protection against liquid mustard at the present date. Liquid mustard penetrates all clothing, rubber, and leather, and burns all skin with which it comes in contact. The burns are hard to heal and prone to infection. Its vapor is more poisonous than the vapor of hydrocyanic acid. Liquid mustard will persist on the ground, grass and underbrush from several days to several weeks. The hostile planes, equipped with mustard tanks and flying low, can release the liquid mustard on its target. This method of projection of vesicant

agents would enable enemy planes to infect large areas and cover large targets within a few seconds and cover the targets so effectively that practically every man and animal would be a certain casualty within a few hours. This would also be the case of any personnel or animals entering, passing through, or occupying the infected area. A recent test of this method with simulated liquid mustard showed six hundred thousand drops of the agent on the standing figure of a man fifty yards down wind from the point of release. Ample drops of this liquid to cause casualties covered other targets extending to four hundred yards distant from the point of release. These planes fly from one hundred to three hundred feet from the ground and at a speed approaching two hundred miles per hour. Another feature of the attack is that a plane precedes the real attack covering the target with smoke which enables the other planes to attack with but little danger from anti-aircraft fire from the columns or bivouacs.

#### Source and Utilization of Fire Power

If cavalry is to function effectively it must be independent of formations, cover and the protection of its own air corps, and it must be able to *abruptly* stop the hostile plane before it can deliver any such attack as described above. Any method of defense against aircraft must include formations that reduce vulnerability and visibility of ground troops and, above all, thoroughly trained air scouts and means of giving the alarm for hostile planes.

That independence can be attained through fire power and particularly through the fire power of automatic arms. Those arms, to be effective, must be potentially able to deliver enough fire, must be properly organized and distributed, skillfully manipulated, and *numerous enough to perform the mission*. These factors involve many others, such as animals, transportation, forage and ammunition supply. It is felt that those phases can be met without great difficulty. Proper formations and powerful automatic arms will enable cavalry to "march divided, fight united."

Machine rifles, an integral part of every rifle troop, have certain possibilities in defense against aircraft. The Browning automatic rifle, fitted to a light bipod and fed with a rugged type of magazine holding at least one hundred rounds, would also offer a quick and flexible volume of fire with certain advantages embodied in a light, air-cooled automatic arm. I believe, however, that the definite and conclusive answer to the hostile low-flying aircraft is the well-handled machine gun. A machine gun troop of eight Browning machine guns, Model 1917, is now included in every cavalry regiment; the war strength troop has twelve guns of this type.

#### Methods of Handling the Present Machine Guns—Machine Guns in Camp or Bivouac

The proper tactical operation of the present machine gun organization provides a considerable defense to cavalry troops in camp, bivouac, or on the road. In camp or bivouac the guns should be placed in positions where they can cover both troops and animals and preferably where the fire of all guns can be concentrated on any planes flying close enough to be dangerous.



### Machine Guns on the March

Machine guns, on the march, must be distributed at intervals in the column. A suggested method would be a platoon with the Advance Guard, and a section following Regimental Headquarters and each Squadron about as shown in the diagram. Distribution of the guns will follow various methods depending on the tactical situation, the activity and proximity of both friendly and enemy planes, the cavalry mission, terrain, etc. The method of distribution of the machine gun units must be flexible in order to meet the varied situations arising from road conditions, terrain, nearness of the enemy, activity of hostile planes, strength of the advance guard, etc. Advanced machine gun units must seize commanding points and go into position covering the entrances and exits of defiles, remaining in position until the main body



has cleared the dangerous points. This is especially important as a single plane armed with a mustard gas spray could, if unhampered in its movements, cause practically one hundred percent casualties in the targets subjected to its attack. These advanced units must be quickly replaced by others in their stations in the column as soon as it emerges from the defile. This can be done by displacing all of the machine gun units forward and having the guns which were in action take the place of those that were near the tail of the column. During halts machine gun units should move to positions commanding air approaches to the troops and be prepared to fire on hostile planes, taking care not to disclose the position of the column by ill-timed or ill-advised fire. These methods will make a considerable amount of rotation of units on the march with consequent wastage of horseflesh and some loss of control. However, these are disadvantages which, of necessity kept at a minimum, must nevertheless be accepted as exigencies of modern warfare and therefore met as practically and efficiently as possible. This method of guarding the marching cavalry column can be done with the present organization. A slight modification of the machine gun mount may be required.

### Machine Guns in Action

Machine guns in action must be able (by means of a suitable mount or adapter) and be prepared to fire on attacking planes just as they they engage any other target; however their normal employment will be against ground targets. The forward guns will usually be fully occupied with ground personnel and animals, hence guns in rear positions can better be assigned to anti-aircraft duties. Machine guns with the reserve may be in position and able to protect the reserve. Personnel in position and led animals have little protection other than cover, concealment, open formations and rapid movement even though the guns are extended in depth. These are important measures but still are inadequate. Hostile planes must get direct hits with machine gun fire and fragmentation bombs to inflict casualties. A mustard-spraying

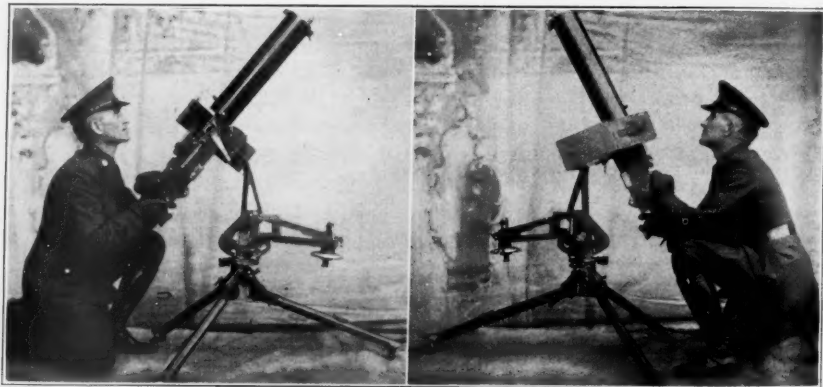
plane has no such problem. Once the personnel or led animals are located the plane can spray the area which they occupy and cover the foliage, grass, underbrush and ground with liquid mustard. Even though men and animals immediately evacuate the area they are inevitably contaminated with liquid mustard from the grass and bushes. It can no more be avoided than the dew. In a few hours all of this personnel and the animals would be certain casualties. This problem must be met. The present number of machine guns is inadequate to meet this menace and in addition perform their normal combat functions.

#### **More Machine Guns Vital**

An adequate number of machine guns of suitable type and properly organized must be provided. In considering anti-aircraft weapons, among the main factors is the question of whether it is better to use the present type with certain modifications or to evolve new weapons. If the present types can be readily adapted to the needs and can perform their functions satisfactorily it is obviously a distinct advantage to use them. This adaptation must provide that no substantial requirements of either ground or anti-aircraft tactical or mechanical measures are neglected or evaded.

#### **Modified Mounts**

There are certain modified mounts and adapters for use with our present machine guns. These appliances have resulted from the recognition by military men of the necessity for protection against attack by aircraft and are of

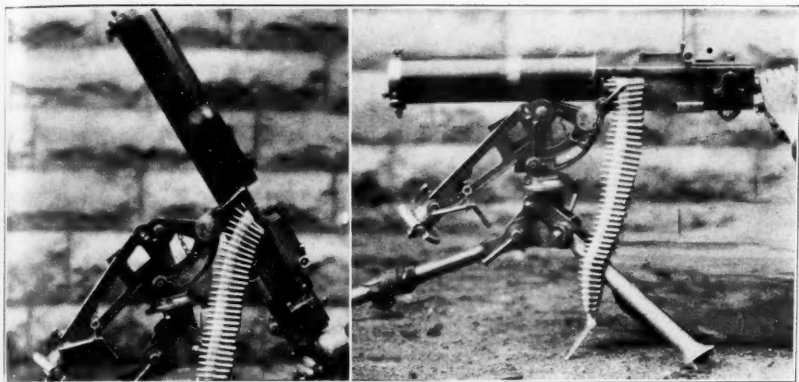


**The Lippincott Adapter. Showing both sides.**

more or less value in meeting the problem. Several of them are briefly discussed below.

*The Lippincott Adapter.*—This is a metal bracket that is carried in pack along the trail leg of the tripod. It can be adjusted to the tripod after the tripod itself is set up. It is light, easily manufactured, inexpensive, requires no change in the present gun, tripod or pack equipment. It is easily carried with the tripod and, it is believed, would give satisfactory results with guns

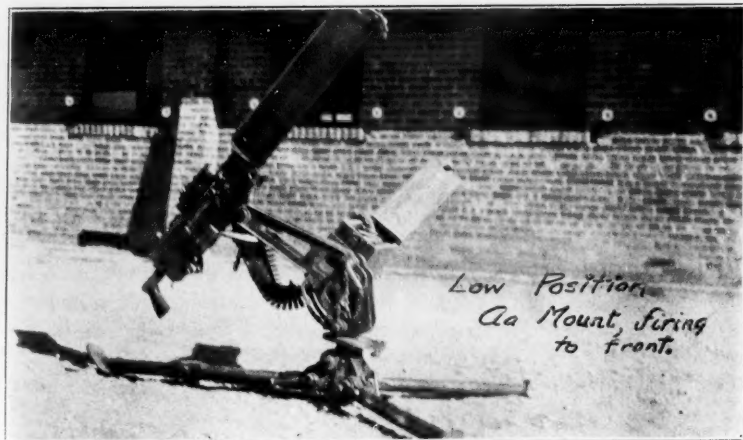
already in position to protect a bivouac or led animals. It could be used with machine gun units to cover the march through defiles but it is doubtful if it could be gotten into action rapidly enough from pack to repel a sudden attack from planes.



**The Burch Adapter**

Left: In position for Anti-aircraft Fire. Right: In position for fire on Ground Targets

*The Burch Adapter.*—This is a small metal extension for trunnion mounting on the forward portion of the cradle. It is light and inexpensive and requires a slight but easy modification of the cradle. It does not permit firing against ground troops when the gun is mounted for anti-aircraft fire. The



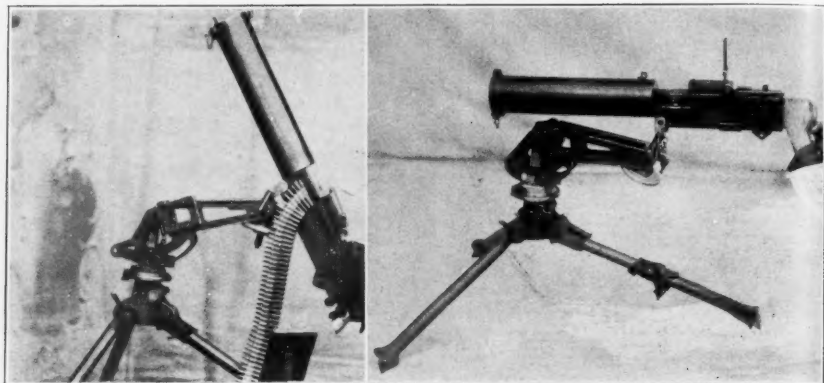
**The Heavy Modification**

same general remarks as apply to the Lippincott adapter also apply to the Burch modification.

*The Heavy Modification.*—This is simply a hole through the two side

plates between the trunnion pin hole and the reinforcing stirrup, permitting the gun to be mounted on the elevating screw. Only about sixty-five degrees elevation is possible.

*The McAleese Device.*—Oval plates with holes to accommodate the elevating screw pin replace the trunnion block bushings and the gun is mounted on the elevating screw.



**The McAleese Device**

**Left: In position for Anti-aircraft Fire. Right: In position for fire on Ground Targets**

*The Mullenix Bipod.*—This is a device designed only for anti-aircraft firing when going into action from pack. This bipod, with which I am naturally more familiar than any of the other devices, was constructed at Fort Riley and made with but one idea in mind—to protect a cavalry command on the march from hostile low-flying aircraft. The only bipod made was constructed of rough iron, no attempt being made at accurate machining or fitting of the parts. It has certain disadvantages. To meet hostile aircraft speed of action is paramount. This bipod has speed. It was easily packed and carried well. All of the other disadvantages can be met by having it made from good materials and properly made by competent mechanics in a well-equipped shop.

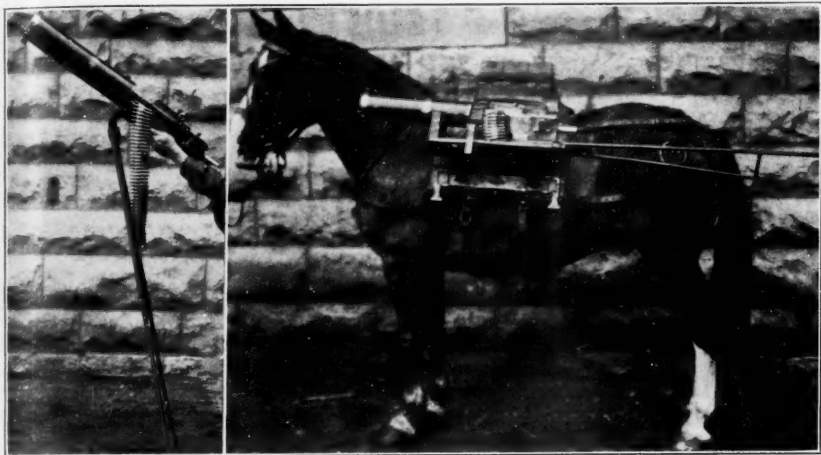
The device consists of a light bipod about four feet in length with a "goose neck" at the top. The gun, mounted in this goose neck, is carried in pack. It weighs about ten pounds, provides an immediate all-round traverse and can be elevated from about twenty degrees to one hundred and eighty degrees. It is easily made, inexpensive, and *provides the vital factor of speed in going into action from pack*—average seven to eight seconds—consistently under ten seconds.

Two methods of carrying it were used, using the same modified hanger. The illustration shows it carried as the near-side load on an ammunition horse. These loads balanced within a few pounds and the gun rode well at all gaits on the roads (short marches) and over the hills at Fort Riley.

The second method was to carry it on the gun horse. The regular gun-

horse load is to carry the tripod on the offside, the gun and a box of ammunition on the nearside, and the spare part roll as the top load. The only change made was the nearside load as shown in the illustration. The loads balanced within one pound.

The gun was carried "half loaded," the gunner riding on the nearside and the driver on the right side of the pack animal. Certain factors, of course, must be changed and improved before the device is practical. It is too long, but



**The Mullenix Bipod as used in action and as packed.**

can be cut down without loss of speed or ease of manipulation. An ammunition clip or container should be attached to the gun. A band with a handle should be placed around the gun to enable the gunner to handle the gun quickly whether hot or cold and to fire more accurately. A modified hanger is required. It is believed that this device, properly constructed and handled, offers an opportunity successfully to meet the hostile plane with the present or a new type of machine gun, machine rifle, or automatic rifle.

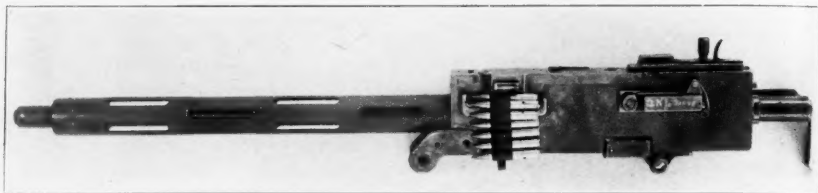
#### **Type of Machine Gun Required**

Without entering into a lengthy discussion of various types of guns and mounts it is believed that an anti-aircraft gun should have certain attributes. Time of going into action should never exceed ten seconds. The gun should be able to deliver at least a hundred round burst repeated several times if necessary, and should have a rate of fire from one thousand to twelve hundred rounds per minute. The gun and mount should be light enough to be easily and quickly handled and manipulated by the gunner. The gun and mount should have an all-round traverse and an angle of elevation from twenty degrees to one hundred and eighty degrees. It must be easily packed, ride well, and be of a sturdy type. Many other points are also essential. It may be watercooled or aircooled. The relative merits of both types are well known

and need no discussion. A word of comment only—the watercooled gun has the particular disadvantage of added bulk and weight. These factors should be at a minimum consistent with performance, especially with anti-aircraft weapons where speed is vital. The aircooled gun cannot deliver sustained fire. However, a gun designed for anti-aircraft defense will seldom, if ever, be called upon to furnish sustained fire. Airplane attacks will be short and sharp, every attempt being made to take advantage of the element of surprise, hence the quality of sustained fire is not outstanding.

#### **Type of Machine Gun Available**

The gun offering the most advantages for anti-aircraft purposes with cavalry troops is the present aircraft type Browning machine gun as shown



**Aircraft Type Browning Machine Gun. Air cooled.**

in the illustration. This is an aircooled gun with a heavy barrel, capable of one thousand to thirteen hundred rounds per minute. It can deliver one hundred round bursts, is light, sturdy, can be easily packed, and with certain small additions and modifications could well be adapted to anti-aircraft purposes. Mounted on a well-constructed bipod, suspended from a point approximately in alignment with the barrel and therefore about in the line of recoil, with a handle for the gunner's left hand, and container or a hundred round clip for ammunition this modified gun would offer a powerful defensive weapon. It could be put into action quickly from pack, probably from five to seven seconds, would afford a high rate of fire, sustained as long as necessary, and, loaded with a high ratio of tracer ammunition would furnish an effective defense for cavalry troops. Its tactical use would not be confined solely to the march but it should be employed to cover the picket lines and bivouacs, to protect the led animals of the gun squads and rifle units, to cover the flanks of the machine gun units, and provide protection for the personnel of all units while in action or reserve.

#### **Type of Anti-aircraft Organization Needed**

Tactical necessities produce weapons to meet them. Weapons being developed, suitable organizations must be formed to transport and man the weapons to meet the tactical situations. The airplane furnishes the chief impediment to the successful accomplishment of cavalry missions. Cavalry, however, must push on to fulfil those missions which frequently permit of no delay, therefore, the march must be free from serious interruption. Anti-aircraft guns must be so organized that they can assure cavalry forces of se-



curity from successful attack. If the regular watercooled gun (Browning machine gun, Model 1917) now issued to machine gun troops were adapted for this purpose it could be transported on a modified hanger and by simply adding a gunner and driver with their animals to each machine gun squad. This could also be done with the proposed gun and in either case would have the advantages of not forming another organization and would also provide a replacement gun in each squad. However, in view of the probable tactics of hostile planes and the different radii of operation of the gun squads, this would very likely lead to confusion, loss of control and lack of coordinated effort. Therefore, as a basis from which to work, it is suggested to have the anti-aircraft guns formed into separate units either as extra platoons of the machine gun troop or as a separate troop. In view of the different functions of these organizations and the unwieldy bulk resulting from combination, it is proposed to form these guns into a troop and combine the two troops into a machine gun squadron under a field officer. A very small staff and headquarters would be needed.

### The Anti-aircraft Machine Gun Troop

The proposed troop would be organized along the following lines:




Troop Headquarters.

Three Platoons of four guns each.

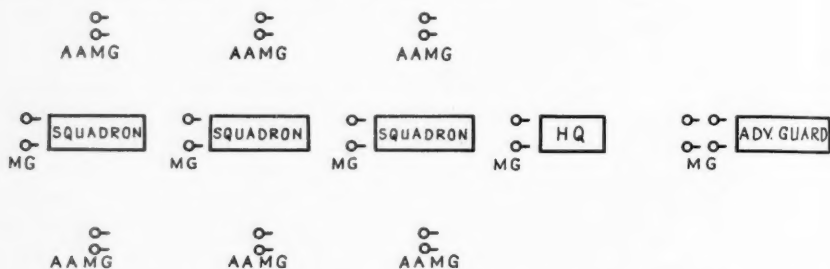
Without going into all of the details the line up of a platoon would be about as follows:

Platoon Headquarters		{ 1 Lieutenant. { 1 Platoon Sergeant. { 2 Messengers.	
Section		Section	
1 Sergeant		1 Sergeant	
Squad	Squad	Squad	Squad
Corporal	Corporal	Corporal	Corporal
Private	Private	Private	Private
Private	Private	Private	Private
Private	Private	Private	Private
Squad Leader and Gunner		Assistant Gunner	
Assistant Gunner		Driver	
Driver		Driver	

Ammunition would be carried and the gun squads formed as follows:

<b>GUNNER</b>		<b>ASST. GUNNER</b>	7 Belts - 700 rounds
<b>DRIVER</b>			12 Belts - 1200 rounds
<b>DRIVER</b>			12 Belts - 1200 rounds
			<hr/> 31 Belts 3100 rounds

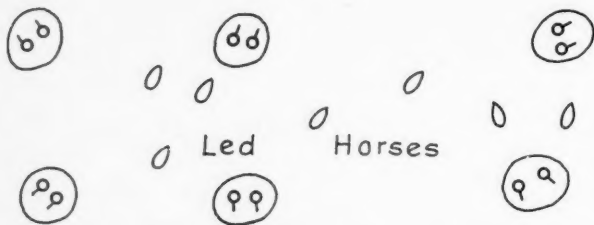
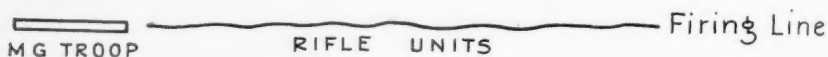
The organization would be disposed on the march about as shown in the diagram. The gun sections would march out on the flanks of the column constituting an additional measure of security against surprise attacks. This formation would prevent the aircraft from covering all of the troops and machine gun units with smoke to cover a mustard or bomb attack. These units would either move by bounds or parallel the march of the column depending on the terrain, and would have to use every precaution to prevent being surprised and captured by ground troops.



In camp or bivouac these guns should be stationed at points from which they could go into action immediately to repel air attacks.



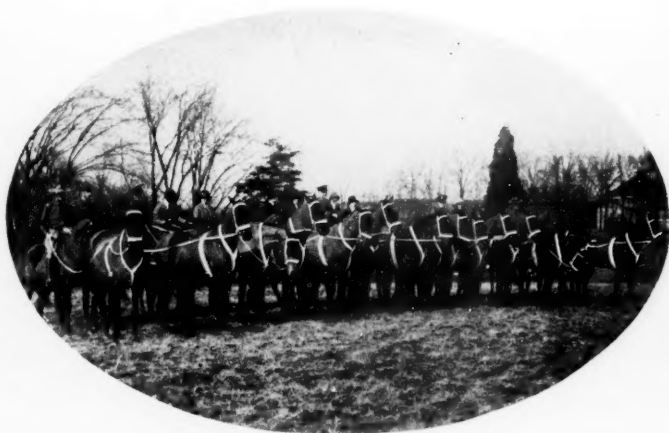
In action they should cover the flanks of the other machine gun units from ground attack and cover the led horses of the rifle and machine gun units.



Time, thought and experimentation will develop suitable anti-aircraft weapons, proficient organizations and correct tactical methods of employment both of troops and weapons. The absolute certainty on the part of aircraft

personnel of encountering violent and accurate automatic fire on the slightest provocation will go far toward providing marching troops with a measure of immunity from the hostile aircraft threat. The airplane menace is a real one. If the air attack succeeds, especially with liquid mustard, the troops thus assailed are defeated in their mission and perhaps exterminated. The one real method of combating the hostile plane is to put it out of action *before it can deliver its attack*—that is just before its attack is launched or in the first few seconds of that attack.

"Thrice armed is he who hath his quarrel just  
But four times armed is he who gets his blow in fust."





"Hugo Meynell, Esq." by Gordon Ross  
Published by Ernest R. Gee, New York

# Forefathers of Fox Hunting

By A. J. O. CULBERTSON

SOMEWHERE near the year 1770 a hard-riding era was ushered into England. Keen followers of the sport of riding to hounds, whether they took their chase or turf religiously, or for the frolic, found that the period introduced a sporting necessity of jumping or negotiating all obstacles.

Of the various characters in that day, Gordon Ross, sporting artist of New York, has produced six colored prints of outstanding, strongly marked personalities, who best represent the traditional worship that the country squire had for his quadrupeds. These rigorous and straight-riding gentlemen left enviable records for riding to hounds that a century more of the sport has failed to shatter.

The hazardous horsemanship of the age, less than a decade before the American Revolution, must have worked tremendous hardship upon the Colonials had they been required to meet the English on the field of battle with cavalry, had the Army of Occupation possessed any considerable number of English foxhunters.

## Hugo Meynell, Esq.

The first of this group of portraits that Mr. Ross has so splendidly engraved on copper is Hugo Meynell, born at Bradley Hall, near Ashbourne, in 1735. Of his life in the annals of sport, it can best be said that he is known as the Father of Fox Hunting, and author of the Meynellian Science or Fox Hunting upon system.

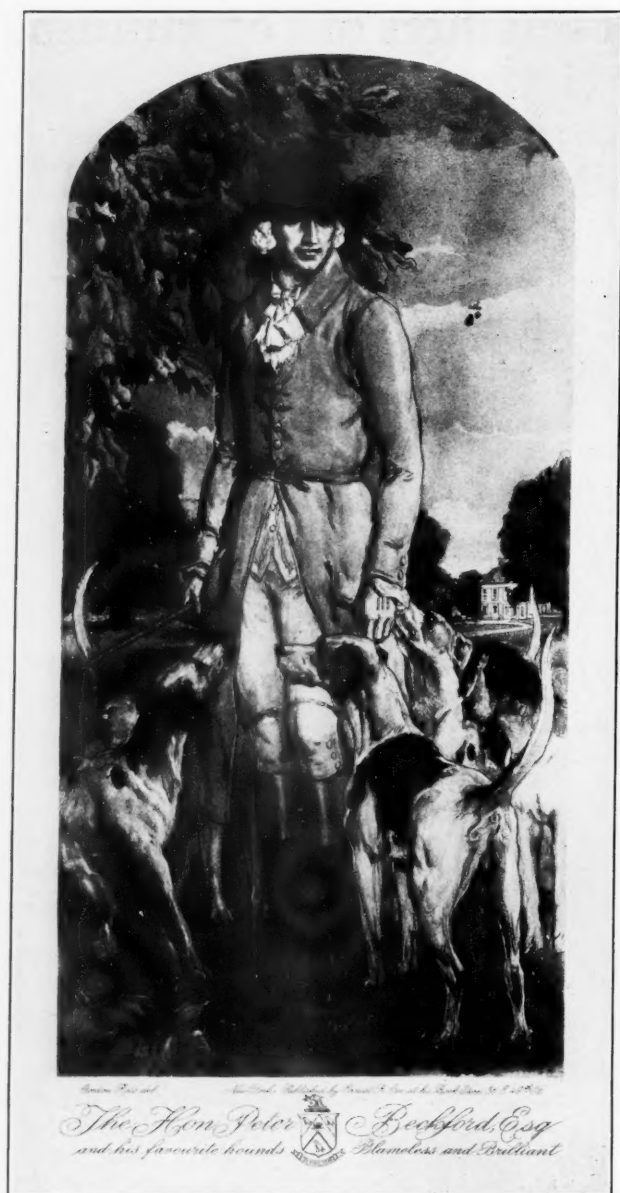
The half-dozen portraits with which this article is concerned, of eminent sportsmen in the eighteenth and early nineteenth centuries, together with a recent reprint of "The Meynellian Science" (since the original edition is practically extinct), have been published by Ernest R. Gee, 35 East 49th Street, New York City.

Hugo Meynell hunted his hounds for nearly fifty years. At eighteen years of age, when most lads are chiefly concerned with academic or social functions, Meynell had purchased Lord Ferrer's hounds and had settled down to a career as M. F. H. The outcome of his devotion to horse and hound is the modern system of foxhunting.

Meynell gave himself over to the breeding of hounds for nose, stoutness and speed. He met with such success with his extraordinarily well-bred pack that they eventually became the source from which issued the best hounds in England.

Meynell was styled by admiring friends, as "The King of Sportsmen."

The engraved surface of Gordon Ross' portrait of Meynell measures ten and one-half inches by eight inches, is oval-shaped and carefully water-colored by hand. The portrait is a happy one, showing him in his old age



"Peter Beckford, Esq." by Gordon Ross

Published by Ernest R. Gee, New York



with tie wig, Master's cap and pink coat. This portrait is used as the-frontispiece for "The Meynellian Science."

### Peter Beckford

Five years the junior of Meynell was Peter Beckford, Esq. (1740-1811). He was the grandson of Peter Beckford, governor and Commander-in-Chief of Jamaica and a cousin to William Beckford, the celebrated lord mayor of London.

Beckford, an eminent sportsman and master of foxhounds, gained his pre-eminence among foxhunters due to the fact that he was the first English writer to describe minutely and accurately the whole system of the sport of hunting. This he did in a very readable work entitled "Thoughts upon Hare and Foxhunting; also an account of the most celebrated Dog Kennels in the Kingdom." A writer in the *Retrospective Review* of that time said: "Never had fox or hare the honour of being chased to death by so accomplished a hunter." Posterity is, indeed, fortunate in having had such a gallant and adroit Rider to Hounds in the early stages of its history, and one who was also a man of letters, leaving considerable memorabilia to succeeding Followers of the Chase.

The name "Peter Beckford" once rang through all the hunting countries and sporting circles of England. Beckford was a wide reader of classical and modern literature, as shown by his published works. Another important work of Beckford's, which came out in 1781, was his "Essays on Hunting; containing a philosophical inquiry into the nature and properties of Scent on different kinds of Hounds, Hares, etc." This work remains authoritative.

Of Peter Beckford's personal life, both in the public eye and private, much can be said as to the man's variety of accomplishment. He married Louisa, daughter of Lord Rivers, in 1773. His son, William Horace, in 1802, by a special patent granted, succeeded to the barony and became the third Lord Rivers. Peter Beckford, representing Morpeth sat in Parliament in 1768. The year 1787 found Beckford traveling in Italy shortly before the outbreak of the French Revolution. His experiences moved him to write what has since been considered an extremely amusing report of his journey. It was published a few years after his return under the title "Familiar Letters from Italy to a Friend in England." In it he entertainingly describes visits to Voltaire, Rousseau and many other celebrated personages. An incident is related of his meeting Laurence Sterne in Turin, in which he had "Passed hours with that eccentric genius that might have been more profitably employed, but never more agreeably."

Throughout Beckford's varied affairs—domestic, political, travels and letters, he remained true to a consuming devotion for horse and hound until his death, on the 18th of February, 1811. Then past seventy, he had but lately ridden in the chase.

A tribute to his love for horse and hound was paid by Sir Egerton Brydges, who said: "Never was huntsman's dinner graced by such urbanity



**"Thomas Assheton Smith, Esq." by Gordon Ross**

**Published by Ernest R. Gee, New York**

and wit. He would bag a fox in Greek, find a hare in Latin, inspect his kennels in Italian, and direct the economy of his stables in exquisite French."

The Ross portrait of Beckford is a full-length, fascinating picture of Beckford as a young man, appropriately encircled by his favorite hounds, with trees and manor house in the background. This series of pictures was begun in 1924, the Beckford portrait having been completed by Mr. Gordon Ross in 1926. The artist spent a great deal of time and thought to the execution of this picture, and has been rewarded with a truly remarkable portrait.

#### **Thomas Assheton Smith, Esq.**

The best and hardest rider England ever saw was Thomas Assheton Smith, Esquire; sportsman for sports sake, born in Queen Anne Street, Cavendish Square, London, on the 2nd of August, 1776.

Smith was educated at Eton, being sent away to preparatory school at the age of seven and left to stand for himself in a fashionable school with older boys. Except for his natural sturdiness, he would have soon headed whimpering homeward. Afterwards he went to Oxford. From 1821 to 1841 he sat in Parliament as a conservative for Andover and Carnarvonshire.

His life was devoted almost entirely to sport. In his youth he had been a cricketer, having made the Eton eleven and later playing with the Bullingdon Club. Up until he ran for Parliament he appeared often at Lords. His early athletic successes were not to be compared to his far greater conspicuous achievements later in the hunting field.

From 1806 until 1816 he was master of the Quorn in Leicestershire. In 1834 he bought a large number of Sir Thomas Burghley's hounds, which he magnificently augmented with the entire pack of the Duke of Grafton in 1842.

Thomas Assheton Smith's energies were prodigious. He hunted his own hounds four days in the week, sometimes having two packs out at the same time. No less considerable was the lavish hospitality he extended at all times to his foxhunting neighbors. His income permitted the maintenance of a large establishment, and as an exemplary host and country squire he conducted all arrangements with great judgment.

He received a tremendous ovation and public demonstration in approbation of his hunting activities, when at Henry Greene's seat at Rolletson in Leicestershire, in 1840, at sixty-five years of age, Smith was proclaimed by an assembly of two thousand horsemen the First Foxhunter of the day. He continued in the hunting field until late in life, following the hounds up within a few years of his death, in 1858, at the age of eighty-two.

Another sport of kings occupied much of his time. While widely contrasting to horsemanship, Smith was much interested in yachting. He was for many years a member of the Royal Yacht Squadron, and difficulties arose when he attempted to introduce steam yachting into the squadron. In his lifetime he had five sailing yachts and eight steam yachts.

Smith, approaching seventy years of age, built a glass conservatory at Tedworth. The sunlit riding hall, three hundred and fifteen feet by forty feet, permitted him to take horse exercise in later years.



*Gordon Ross del.*

*New York. Published April 1855, by Ernest R. Gee at his Book Shop 55 East 20th Street*

*Yours truly*



*Nimrod*

**"Nimrod" by Gordon Ross**

**Published by Ernest R. Gee, New York**

Mr. Ross' portrait of Smith measures seventeen and one-half inches by twelve inches, and is a companion picture for the three remaining portraits. Of these well-known foxhunters, no portraits have been available before, and the Ross portraits have done much to revive and stimulate interest in these Forefathers of the Chase.

While showing a splendidly staunch man of middle years, mounted for the hunt, Mr. Ross's portrait could well be that of a judge advocate rather and the stalwart cricketer of years before. The background is an authentic delineation of the country he hunted. This portrait was published in 1926.

#### Charles James Apperley "Nimrod"

Charles James Apperley (1777-1843), an English sportsman and sporting writer, was better known as "Nimrod," under which pseudonym he published works on the Chase and the Turf. Apperley was born at Plasgronow, near Wrexham, in Denbigshire.

The years 1805 to 1820 he devoted almost entirely to foxhunting. In 1821 his numerous contributions to *The Sporting Magazine*, which were a series of racy articles, aided in doubling that publication's circulation.

Mr. Pittman, who was a proprietor of *The Sporting Magazine*, arranged to keep a stud of hunters for "Nimrod," with which he made tours to various hunts. Besides this, Apperley received a handsome salary. The death of the publisher led to a lawsuit with the other proprietors for money advanced, and Apperley, to avoid legal difficulties, fled to the Continent in 1830 and lived near Calais, where he subsisted entirely by the earnings from his writings. He died in London in 1843.

His most important works are: "Remarks on the condition of Hunters, the Choice of Horses, etc." (1831).

"The Chase, the Turf, and the Road." (1837.)

"Memoirs of the life of the late John Mytton" (1837), and various adventures of the "Nimrod" tours, etc.

His Memoirs of Mytton—the Wild Hare Mytton—are interesting in that Mytton, though born twenty years after Apperley, died ten years before his biographer. They had this in common, the love of the hunt, and that when pressed with monetary impedimenta they both hurdled the Channel to Calais. The dangerous, racy pranks of Hazardous-Horseman Mytton made excellent copy for Horseman-Litterateur "Nimrod."

Mr. Ross' portrait of "Nimrod" was published in 1925. The intelligence of the face seems greatly centered about the eyes, which peer with keen observation and valuation.

#### John Mytton

John Mytton (1796-1834), a very colorful and eccentric sportsman, was born September 30, 1796, at Halston, Shropshire.

While an infant his father died, leaving him a fortune estimated at more than a quarter of a million in ready money and an income of around \$50,000 a year.



**"John Mytton" by Gordon Ross**  
 Published by Ernest R. Gee, New York



He was educated at Westminster School and at Harrow. It is said he was expelled from both. He knocked down a private tutor to whom he was subsequently sent, so he got off to a good start in the life that was to be lived impetuously and end so abruptly.

Whether for a lark or for reasons disciplinarian, it is not known, but when he was twenty years of age he joined the 7th Hussars and served with them in France for a short time.

He became Master of Fox Hounds in 1817, hunting what was later known as the Albrighton country. He was an owner of race horses and kept a large stable, but never bred a good horse.

Mytton returned to Parliament a Tory for Shrewsbury, but resigned. He held the office of High Sheriff for Shropshire and Merionethshire.

He was popularly known as "Jack Mytton," a man of great physical strength and reckless courage, with an inordinate love of conviviality and a strongly developed taste for practical joking. He was also a good shot. Many stories are told of his recklessness.

On one occasion he is said to have driven a tandem at night across country for a wager and successfully surmounted a sunken fence, three yards wide, a broad deep drain, and two stiff quickset hedges.

It was reported that he would sometimes strip to his shirt to shoot wild fowl in bad weather.

Once the rumor circulated that he followed some ducks, in *puris naturalibus*.

Chroniclers of the times have alleged that one night he set fire to his night shirt in order to rid himself of hiccoughs.

He drank from four to six bottles of port daily.

It was inevitable that this reckless, spendthrift manner of living would soon lose Mytton his fortune. At thirty-five years of age his inheritance had been dissipated, his effects at Halston were sold and he was obliged to take refuge at Calais from his creditors. He died of delirium tremens in King's Bench Prison in 1834, at the age of thirty-seven.

Mr. Ross' portrait of Mytton shows him mounted, in pink coat and silk hat, with the manse snugly clustered among trees in the background. Mytton's deep, watery, yet dark eyes, suggests one who lived well but not wisely. The firm chin and rugged set of his shoulders, however, indicate his hardihood.

#### **Robert Smith Surtees, Esq.**

Robert Smith Surtees (1803-1864), English novelist and sporting writer, was a member of an old Durham family of Hamsterley Hall. He was educated to be a solicitor, took rooms in Lincoln's Inn Fields, and began contributing to the old *Sporting Magazine*.

In 1830 he compiled a manual for horse-buyers, in which he combined his knowledge of the law with his taste for sporting matters.

Surtees is best remembered for his highly entertaining and ludicrous character "Jorrockes." In his "Jorrockes' Jaunts and Jollities" he gave birth



"Surtees" by Gordon Ross

Published by Ernest R. Gee, New York

to one of the hunt's most humorous narratives and brain children. It deals with the sporting experiences of a Cockney grocer. These stories of Jorrocks and his adventures suggested the later and more famous "Pickwick Papers" of Charles Dickens.

"Handley Cross," a novel published in 1843, also featured Jorrocks and elevated him to the position of a country gentleman and a Master of Fox Hounds. This and many subsequent volumes of Surtees' were illustrated by the incomparable John Leech, whose pictures of Jorrocks are everywhere known and were the chief means of ensuring the stories' lasting popularity.

Surtees became a major in the Durham Militia and High Sheriff of the county in 1856.

His friend "Nimrod" urged him to try his hand at a novel, the result was "Handley Cross."

Surtees was a keen observer, very tall, and a good horseman, who, "Without ever riding for effect, usually saw a deal of what hounds were doing."

The brilliantly humorous original illustrations of John Leech did much to perpetuate the life and characters of Surtees' novels. Jorrocks, the main character, a grocer, possessor of a county seat, representing all that was best of Cockney vulgarity, but the quintessence of good humor, absurdity and cunning, led a progressive life in the *New Sporting Magazine* from 1831 to 1834.

Surtees had a positive objection to seeing his name in print and his "Horseman's Manual" was the only one of his books to which he affixed his name.

Of the six portraits by Gordon Ross, the one of Surtees is, perhaps, the finest. It possesses a stately, incomparable dignity. Only faintly can the humor of the creator of Jorrocks, Soapy Sponge and others be discerned about the corners of Surtees' mouth. The protruding chin and sharp eyes show the penetration, yet imperturbability, of Surtees.

For the past two years Mr. Ross has been engaged in painting portraits of horses. He has also published two-colored steeplechase prints from his own address at 33 Fifth Avenue.



# The 1928 Olympic Team in Training

By CAPTAIN W. B. BRADFORD

MOST of us have sat in for a hand of "draw." We have received our quota of cards, all that the dealer would let us have, have studied them, discarded a few, perhaps a majority, and received new ones to replace those that were rejected. Possibly the new hand disclosed a full house. Probably not. In any case, the game was played with the cards that we found after the final draw.

The captain of the 1928 Olympic Team is in a situation somewhat similar to that of the poker player. He has had a large quota of horses sent him for the Games. Most of these have been studied and discarded for some good reason, and others drawn. Now there are in the stables just those with which he must play the game and nothing more may be expected from the dealer. Army organizations, army officers and civilians have all been most generous in offering what they have had. There have been horses sent to Fort Riley, where the team is in training, from San Antonio, from the border, Fort Leavenworth, Milwaukee, Pittsburgh, Washington, New York, Virginia, Philadelphia, West Point, Los Angeles, Fort Sill, and a large quota from the Cavalry School. All of these have been given as thorough a try as limited time would permit, and finally a few selected that were thought to be the best prospects because of their ability, soundness and state of training. Many that were rejected are undoubtedly excellent horses, better perhaps, than some that were retained. But in making selections, those that are responsible have had to ask themselves many questions. "Is he sound? Is he sufficiently capable? Does he lend himself readily to training over big, strange obstacles without wings? Has he the courage to face an absolutely strange course without faltering? Can he go the distance and stand the punishment?"

The number that can meet all requirements is appallingly small. Many that are now in training lack in one or more important qualifications. But they are good material, and the best that is available. The horses at present constituting the Olympic Stable are as follows:

## Three Day Horses (For Equestrian Championship)

### Owner—

- |                                |                                      |
|--------------------------------|--------------------------------------|
| 1. <i>Misty Morn</i> .....     | Major Sloan Doak, Cavalry            |
| 2. <i>Bones</i> .....          | Mr. Jack Lapham of San Antonio       |
| 3. <i>Strike Breaker</i> ..... | Major A. E. Wilbourn, Cavalry        |
| 4. <i>Diplomat</i> .....       | Lt. J. W. Wofford, Cavalry           |
| 5. <i>Ozella</i> .....         | Lt. J. M. Callicutt, Field Artillery |
| 6. <i>Norraine</i> .....       | Lt. E. Y. Argo, Field Artillery      |
| 7. <i>Pathfinder</i> .....     | Remount Service, Washington, D. C.   |
| 8. <i>Shorty Kromer</i> .....  | The Cavalry School                   |
| 9. <i>Beau Geste</i> .....     | Capt. F. L. Carr, Cavalry            |
| 10. <i>Star Shooter</i> .....  | The Cavalry School                   |
| 11. <i>Verdun Belle</i> .....  | Capt. F. L. Carr, Cavalry            |
| 12. <i>Peter Prime</i> .....   | Mr. O. L. Prime, Milwaukee           |

## Performance Jumpers (For Jumping Championship)

1. *Jack Snipe* .....The Cavalry School
2. *Sandy* .....The Cavalry School
3. *Nigra* .....The Cavalry School
4. *Colleen* .....Mr. Victor Mather, Philadelphia
5. *Proctor* .....U. S. Army, Fort Leavenworth
6. *Timber Cruiser* .....Lt. E. Y. Argo, Field Artillery
7. *The Wop* .....Lt. E. Y. Argo, Field Artillery
8. *Miss America* .....The Cavalry School
9. *Joe Aleshire* .....The Cavalry School
10. *Dick Waring* .....The Cavalry School
11. *King* .....Fort Leavenworth
12. *Rocket* .....Mr. Richard Mellon, Pittsburgh
13. *Queen's Own* .....West Point
14. *Messenger* .....Major O. I. Holman, Cavalry
15. *George Williams* .....The Cavalry School
16. *Fairfax* .....Major J. R. Underwood, Veterinary Corps
17. *Gedney* .....The Cavalry School

The equestrian events of the Olympic Games habitually consist of three separate contests. The first is known as the Equestrian Championship, or Three



Day Ride. It was planned and is intended for officers' chargers. A schooling contest is held on the first day, a severe cross country ride on the second, and jumping in the stadium on the third. A thoroughbred horse, or a horse of thoroughbred type, is required.

The second contest is for the Schooling Championship. There are at present no horses known of in America that could be schooled sufficiently in so short a time for this event. The United States will not be entered.

The third event is the Jumping Championship. This is over an *unknown course*, consisting of sixteen obstacles, varied as to height and breadth. The course may be from one thousand yards to slightly more than a mile in length, and must be galloped at a speed of fourteen miles per hour.

The personnel at present gathered at Fort Riley in training are: Brigadier General W. C. Short, Team Manager; Major Sloan Doak, Cavalry, Team Captain; Major H. D. Chamberlain, Cavalry; Major O. I. Holman, Cavalry; Major C. P. George, Field Artillery; Captain A. W. Roffe, Cavalry; Captain R. C. Winchester, Cavalry; Captain F. L. Carr, Cavalry; Captain W. B. Brad-

ford, Cavalry; Lieutenant E. Y. Argo, Field Artillery; Captain P. T. Carpenter, Veterinary Corps, Team Veterinarian. Captain F. H. Waters has been with the team until recently, but was relieved at his own request to accept a detail that would not have been open to him after June first.

The training now being conducted differs for Three Day Horses, and for Jumpers. The former are required to school and gallop in a severe cross country test, as well as jump. Monday and Friday of each week are devoted to schooling, one hour; conditioning, one hour; jumping, under saddle, one hour. Jumping includes practice over the Cavalry School steeplechase course, as a steeple chase is included in the cross country phase of the ride. On Wednesday, the program is the same, except that jumping is on the longe. On Tuesdays, Thursdays and Saturdays, three hours are devoted to conditioning. One hour is at the walk, the horse being led by a groom. The remaining two hours are under the saddle, with an officer up. Much time is devoted to rating, the trot being about ten miles per hour, and the gallop twelve, fifteen, twenty



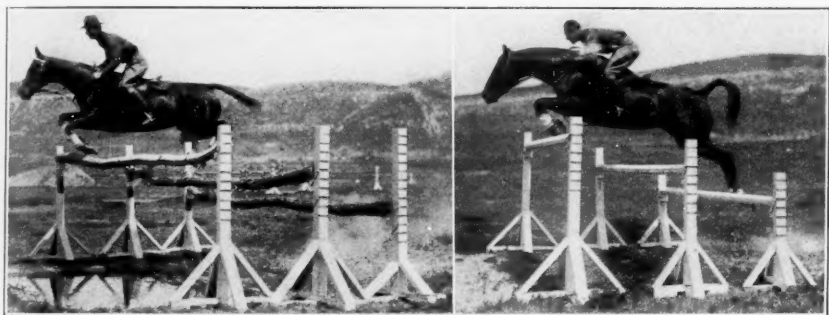
and twenty-two and one half, the exact ratings depending upon the natural gaits and individual ability of each horse. Cross country conditioning gaits are normally fast, the trot averaging ten miles per hour, and the gallop fifteen. On conditioning days, Three Day Horses cover distances of from fifteen to twenty miles each in the course of the day.

Jumpers must have galloping ability, but of a lesser degree. They must be fit physically, and their muscles hard. On Mondays and Fridays, they are ridden over jumps, and in addition, are given conditioning work for one and one half hours. On Wednesdays they are longed over big varied jumps, ranging up to five feet four inches in height, giving them the habit of facing confidently obstacles of extraordinary size. Oxers and in-and-outs especially are employed, the oxers being built up as high as four feet eleven inches. In addition, there is one hour of conditioning. Tuesdays, Thursdays and Saturdays are devoted to conditioning. The periods are from two to three hours, depending upon the individual. The work consists largely of walking up and down hill, and periods of from five to fifteen minutes at the gallop. Jumping under the saddle is done entirely out of doors, obstacles without wings. On the longe, it is indoors.



The obstacles being used are the same for the two classes of horses, though they vary as to size. Three Day Horses are now jumping obstacles at four feet two inches, with a breadth of six feet. Water jumps are much wider. The courses consist of from fifteen to twenty jumps, with total distances of from ten to twelve hundred yards. Every conceivable type of obstacle is employed. There are water, ditch and bank jumps, and combinations of these with other obstacles. For instance, there is a triple bar, with six-foot spread, and water five feet beyond; a ditch in-and-out, with ditches eight feet wide, four feet deep and twenty-four feet apart; double oxers; combinations of ditches and post and rails; an in-and-out consisting of a post and rail, with five feet of water on the far side, followed at twenty-four feet by the exact reverse of this jump; another in-and-out spaced at thirteen feet, followed by a double oxer at twenty-one feet. The painting of the jumps is often changed. There are no wings. Everything possible is being done to confirm all horses in the habit of going on and over anything that might be placed in their paths.

The team will consist of the manager, team captain, veterinarian and six other officers. Nine enlisted men and sixteen horses will go. Teams will con-



sist of three entries for each event, all of whom must finish the entire course in order that the team may score.

Present plans call for the continuation of training at Fort Riley until June eighth. The team will then ship to the Westchester Biltmore Club at Rye, New York, in response to a very kind invitation from Mr. John McEntee Bowman. The hot weather of Kansas will thus be avoided and final training and preparation will be conducted under favorable conditions. On July tenth, the team ships for Holland, arriving about July twentieth. Stables, quarters and training grounds have been secured at Hilversum, twenty-five kilometers from Amsterdam. Training will be resumed there and continued until August ninth, the first day of the Equestrian Events of the IX Olympiad.

These plans, so rapidly approaching consummation, are the result of much thought and care. That they are possible is due to the army loyalty of Colonel Pierre Lorillard, Jr., of Tuxedo Park, N. Y., and other civilian horsemen.

Since the close of the World War, Colonel Lorillard's interest in the service, and especially in the horsemanship activities of the service, has been whole hearted and continuous. That the army has been represented in recent Olympics and in the eastern international contests of the past few years has been due to his effort, and the time and thought he has so freely given. According to present law, the War Department is unable to direct activities of this kind, where expense to the government would be incurred. Were it not for the unfailing loyalty and interest of our civilian friends, such representation and competition would be impossible.

None are more aware of this fact, and more appreciative, than the members of the team and those who are in charge of its activities. It is realized that the service and its civilian friends have the right to expect a real effort. This effort has been made, and nothing has been neglected in the preparation of such horses as are available to the team.



## "The Horses Come Before Anything Else"

When Mr. Barry Shannon was called to the colors during the World War, he was manager of Colonel Edward Riley Bradley's famous *Idle Hour* stock farm near Lexington, Ky. Upon departing for military service, Mr. Shannon's brother, Jim, took over the management of the farm. The following letter by Mr. Barry Shannon was written to his brother in order that the latter might benefit by the experience of the former who, on his return from the army, reassumed his duties as manager of *Idle Hour*. The letter contains so much sound advice applicable to any horseman that it is here reprinted, with the consent of Colonel Bradley and The Thoroughbred Horse Association Bulletin where it first appeared in print.—*The Editor*.

DEAR Jim:

I am writing you this letter for your own advantage, and I hope you will take it in its right sense.

To begin with I must tell you that the interest I am now taking in *Idle Hour Farm* is for your own benefit. I naturally liked the farm and knew every nook and corner of it, so I can describe every end of it to you from here.

The horses come before anything else and you must always bear this in mind. No matter how much work is to be done on other jobs, be sure the horses have been attended to first.

Get a leather-bound note-book of good size. Books with paper or composition backs wear out. Start your book with the broodmares. They will be the foundation of your horse work. Put the name, breeding and first two crosses of the mare at the top of the page. The above is very necessary for ready reference and also in registering and selling. Take the markings of each mare and familiarize yourself with the mare's appearance and you will soon learn to know them. When you get a number of mares of the same color you will always find there is a distinguishing mark of some kind—such as punch-firing, saddle marks, grey hairs, etc. Next record your yearlings and then the foals.

The first thing to do after breakfast is to go on a tour of inspection. Look each animal over thoroughly, no matter if you saw them all close the day before, for things like these can happen: halters slip over the ear; thrush, causing lameness; kicks under arm pits that do not show up and many other things that require a close inspection to see. Never depend on the men for these inspections. Their main idea is to get through a day's work the easiest way.

See that the stalls are level to the door sills with clay, and that the straw is thrown well back against the wall, so center of stall may dry. Lime should be placed over wet spots daily. Notice feed boxes to see if horses clean up their food, also notice that no old bran or mash be allowed to remain in feed boxes. The feed room should be cleaned thoroughly, a box of medicine and oats should be in each feed room. Do not allow rubbish, bottles, wire, etc., to collect there, for careless persons never throw a match anywhere save in

such places. Watering troughs should be cleaned weekly and a little lime put in the trough—not too much, though.

The weanlings will soon start to discharging at nose, and unless cured up this fall, will surely break out fresh again in the spring. Use Knoma oil, one ounce daily, and swab out nose at same time of dose. Best time to give will be in the evening, say around 3:30 or taking up time. Give hot bran mash every night beginning December 1st. I got great results from this. Yearlings come to spring in glossy coat and fatten quickly, also you will have less sickness.

Have feet trimmed first of each month—not too close, just round off the rough places. Keep salt handy at all times in the barns and do not be afraid you will have too much ventilation, however, do not have a draft. Have the back shed on the west side of the eighteen-stall barn on the hill covered with canvas. I mean this for cold weather, say along in January, or even sooner.

Now the mares, when you wean their foals, require very close attention for three weeks. Milk them twice a day, night and morning, the first three days. Each time after milking rub with camphor oil. Some of the mares are abundant milkers and must receive special attention. Remember that the supply of next year's milk depends a lot on the drying up of this year. Should any of their bags swell and become feverish, get prescription called Anodyne mixture from Dr. Ed Hagyard. Use the same as camphor oil. Whenever you have to keep the mares up on account of cold weather, cut down their feed. Same applies to yearlings.

For the foaling season get a good watchman and explain to him the duties of man during this important period. Quick action on the part of a watchman during foaling season saves many a foal. After a mare has foaled see that she comes to her milk, and give her good hot mash and plenty of solid clover hay. Turn foal out if weather permits, but never allow him to lie down. Keep man near at all times.

After going on tour of inspection after breakfast, stay out until 10:30, then come to office and answer phone calls and do necessary ordering and attend to your correspondence, until dinner. Rest until 2 p. m., and then go out again. This time look after your farm work. A very necessary thing is that your teamsters and farm men return to their work at 1 o'clock. The afternoon slips by quickly and unless this is attended to you will not accomplish much. After the corn is cut and shocked, have the manure hauled to the furthest end of the field while weather is good. This enables you to haul to the outer edges in bad weather. Keep all the teams together when possible; also all your men. Concentrate your farm work. When the farm men scatter, they lay down.

Now, during good weather, fill the stalls at the new barn and do necessary grading. Make it the same as barn near boarding house. Put rock gravel under the shed extending out under eaves of barns. Get barn in shape now. Buy heavy water buckets for this barn. Real heavy.

Get the general ledger from the book-keeper. Go over it once a week.

Study the different accounts and then you will know how you are running. This year will run high, as so many changes have been made. Salaries are higher. Feed costs more, etc.

Start taking inventory now. Save old inventories and put your new one with it. Do not let accident insurance run out on automobiles.

When feeding silage to cattle, feed morning and night. Cut the fodder up with silo cutter and blow into the loft of the old mule barn. This is a great thing. You get the same food value of the fodder and save all the hauling in wet, bad weather. Feed to cattle on snow during midday of bad weather. Keep in mind all the time, Feed, Feed, Feed. Your stock will repay you. Nothing will give you more pleasure on a cold day than to go through cow and cattle barns and see the stock well bedded and eating and under cover.

Get yourself a solid gum coat, high top shoes, good buckskin gloves and overshoes. Have plenty of dry clothes to change.

Keep your office neat and tidy, your desk clean of all papers. Burn old newspapers. Have clean blotters, pen and ink always; also special delivery stamps and ones, twos and threes. Arrange your important 'phone numbers on desk. Always leave word at farm where you can be located in town and where on farm. Instruct cooks to keep a slate handy at 'phone, to put all calls down and to call you immediately for important ones.

Always keep medicines up. Have Knoma oil, boracic acid (large quantity); spirits of nitre, iodine, arnica, eye salve.

Wet days let your teamsters clean and oil their harness; grease their wagons; sharpen axes and saws; clean grainery; gather up sacks; return them and get credit; stop any leaks of oats in grainery. Put up saw mill at once. Haul wood to near door of power house. Stack in a neat pile and have men cut up a lot for the residence and the mash house. See that men keep the mash house clean. If you don't it will look like a pig pen.

Now, as to your hogs. Put seven or eight in a separate pen now. Get them ready for killing, but only kill two at a time. Use farm men for killing. Keep close watch on tobacco barn. Mighty close to pike. Examine the bulks so you will miss any.

Paint all the farm wagons, one at a time. Let one dry thoroughly before starting another. Also paint cart. Assemble all tools, mowers and machinery to tobacco barn after the stripping is well under way. Repair and order all parts for plows, rakes and mowers. This keeps your men going and you conserve time and will be ready to start out any time. Keep rivets and a punch handy at work horse stables so men can repair harness. Insist that wagons are greased weekly. Send one wagon to town twice a week. Bring out freight, lime, salt and all heavy stuff. Always keep one barrel of oil on hand. When the track cook comes home, put him in charge of the bunk house. Hold him responsible for all blankets and linens.

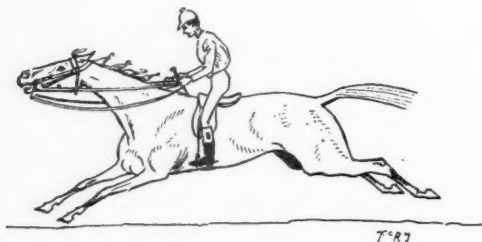
Make Saturday afternoon a cleaning up afternoon. Call farm men in from other duties. Send one wagon through woods to clean brush. Let them go two or three on wagon. Have another wagon with hammer, nails and saw;

extra plank and posts. Make a round of the fences. Keep all pull gates in order with rope and pole on them and properly hung. Let the men cover as much fence as possible and make a note where they left off so they can resume work following Saturday.

Know where your men are at all times. Be good to them, but strict. Fire all disturbers and kickers. Go up into the lofts now and then. Find how you stand on feed. Check all bills. Know where each thing was used. Mark what account it goes to and O. K.

Do not let stationery run out. Take care of all details, no matter how small. Have a notebook. Make out your plans for following day. On Sunday afternoon go over the farm with a couple of the men and exchange ideas. Don't argue with the men. Sift their views over in your own mind and act on your own judgment. Never worry. Things always adjust themselves with a little assistance. Read all the turf news. Keep posted on farm journals. File this letter away. It's practical experience and can't be bought. Write when you have a chance. Best wishes.

BARRY.





# Motorized and Cavalry Divisions

By COLONEL MAURIZ WIKTORIN\*

\*EDITOR'S NOTE—Colonel Mauriz Wiktorin, Austrian Army, started his service in the cavalry, took part in the beginning of the World War in a cavalry division as a General Staff officer, and is at present a colonel, General Staff Corps, Austrian Army, with station in Vienna. He is occupied constantly with questions concerning modern cavalry, has published several articles in Austrian, German, Swedish and Swiss military magazines, and has delivered many lectures on the subject. This article, setting forth his views, has been written for *The Cavalry Journal* at an opportune time, while the question of motorization and mechanization are in the minds of all military men.

THE question of organization of motorized army units (Divisions or Brigades) occupies constantly the military circles of all governments.

There is no doubt that the technics will succeed within measurable space of time in creating motorized units which will be sufficiently mobile to be suitable for combat, and can, therefore, be well used for special purposes. It is unquestionable also that there will be only a small number of such units. Motorization of the whole army, even in countries with high industry, best system of roads, abundant supply of fuel and oil and money, is an utopia for many years, probably forever.

We will examine here the question whether, and to what extent these motorized units can replace the cavalry. For this we will have as an example a motorized division, as proposed by the French Generals Camon and Boullaire, and compare it with a modern European cavalry division.

## Reconnaissance and Terrain

The principal condition for the use of motorized units on a large scale depends on the terrain, which must be neither too mountainous nor swampy nor covered with forest; must have many good and wide roads with strong bridges; and the roads must be kept constantly in good condition.

Let us first examine the main mission of a cavalry division, the reconnaissance. If the motorized division has to replace it, it must take up the reconnaissance also.

A motorized division will use for the reconnaissance, in the first place, the motorcyclists and armored cars of the light brigade. But they depend for the present time almost entirely on the roads, thus they can see and report only what is going on on the roads and close to them.

The mission of a reconnoitering force includes searching along the whole front of the enemy in order to establish his strength and the distribution of his forces. The enemy must be observed continuously; that is, the reconnaissance detachment must follow the enemy everywhere, also across the terrain. The touch with the enemy must be maintained constantly.

The reconnaissance detachments must also be ready for fighting, as no details on the enemy can be obtained otherwise. This requires not only rather strong forces but also machine guns and artillery guns. Furthermore, the combat must be conducted on the terrain only. Also, the reconnaissance takes place mainly on the terrain, away from the roads. Speed and mobility are especially important. There is no doubt that here the rider is superior to the motorcyclist. As soon as

the motorcyclist leaves his motorcycle in order to be more mobile, he sacrifices his speed and runs the additional danger of losing his motorcycle. Even if there are at times motorcycles which can be used on the terrain, the rider with his horse, which can jump over obstacles and climb, will still be much superior.

Finally, the eyes are most important for the reconnaissance. Therefore, a comparatively large number of men is necessary for this style of work. Four hundred motorcyclists of a motorized division are not sufficient.

In order to reconnoiter the sector of a cavalry division of from twenty to thirty kilometers in width, twice as many motorcyclists, that is, eight hundred of them, are necessary. This is, of course, out of question, as the motorized division will be too large.

In case the enemy's reconnaissance is to be prevented, cavalry can easily put obstacles in the path of the motorcyclists and armored cars which are restricted to the roads, and then attack them by surprise. On the other hand, the cavalry can avoid a stronger enemy by a quick movement into the terrain, make a detour and appear again at another place. In one word, all these actions can be accomplished by the cavalry much more easily and more quickly than by the motorcyclists, although the latter are much more mobile than mounted men while marching on the roads. But this speed of motorcyclists can be useful only as long as there is no enemy.

Thus we see that the reconnaissance work of the cavalry can not, for the present time, be accomplished either by the aviators alone or the motorized units alone. Aviators, mounted men and motorcyclists must cooperate in reconnaissance work. Good results can be obtained only by this cooperation.

#### **Length of Column and Rate of March**

Let us compare now the conditions on the march. About ten kilometers per hour and a daily accomplishment of from eighty to one hundred kilometers is considered reasonable for a motorized division. But motorized divisions can march almost only during the night, as they can otherwise be easily discovered and attacked by airplanes. An automobile column is easily affected by the attacks of airplanes. Besides, the element of surprise is lost. If the automobile column marches during the night, its speed is only from six to eight kilometers per hour. Stops in the movement of long automobile columns occur during the day and especially during the night. These delays last sometimes an hour, or even longer. Thus the speed is, in practice, still much slower than calculated. For example, during the French maneuvers in 1925, a motorized detachment moved during the night only five kilometers per hour, and at another time even only three kilometers per hour.

Motorized units can not move day by day without interruption. Rests must be made. Drivers must put their autos in good order.

A cavalry division marches from six to eight kilometers per hour during the day and from four to six kilometers per hour during the night if the horses are in good condition, and can march for several successive days at an average of fifty kilometers per day. Thus there is not a very great difference in the speed of the march between the motorized and the cavalry division.

While actually marching, a motorized division moves one and one-half times faster than a cavalry division.

Now, how is it with the length of the march column? A motorized division has about six hundred automobiles and about four hundred motorcycles. An automobile needs, taking into consideration the intervals, fifty meters; one motorcycle, five meters, considering that the motorcyclists ride by two; that is, five meters provides room for two motorcycles. This gives us as a length of column thirty-two kilometers during the day time. At night, when, owing to safety reasons, the automobiles must be driven at greater intervals, the column is almost fifty kilometers long.

It is clear that the command of such a long column is very difficult. If possible the division marches, of course, on several roads but this can not always be done as other troops of the army occupy other roads and columns are usually moving in both directions.

A cavalry division has a length (without trains), if the riders ride by two, as usually, of about ten kilometers during the day time and not more than fifteen kilometers at night. Therefore its length is only one-third that of a motorized division. Be mindful also that the march of a motorized division must be well organized and regulated very accurately, the same as is necessary for movement by rail, otherwise stops and accidents may easily occur.

#### **Flank Protection on the March**

So far we have compared only the march of a motorized division with a cavalry division without taking into consideration the enemy's action except occasional airplane attacks which can be prevented by our own aviators.

In this case the motorized division is, of course, superior to the cavalry division in speed, as we say in "strategical mobility," although not as much superior as might be believed prior to examining closely all the conditions discussed above. Conditions change entirely as soon as the enemy's counter action is taken into consideration. Then the question is of "tactical mobility" and utilization on the terrain.

Every march must be protected. How is a motorized division protected? By the airplanes flying at far distance. In the front and the rear the roads are protected by motorcyclists, armored cars and light tanks. More difficult and more important is the protection from both sides, the flanks. Protection of flanks must be carried on off the roads, that is on the terrain. Therefore automobiles which can move on the terrain, that is armored cars provided with caterpillar tread or light tanks must be used which, distributed on the whole length of the column, accompany it on the flanks. But these cars cannot, in the first place, move as fast as the automobile column on the road. Thus the automobile column must regulate its speed according to that of the protection on the flanks. In other words, the speed of a motorized division in the sphere of operation of the enemy is still much lower than previously calculated. Therefore the main advantage of a motorized division, its higher speed, is partly lost.

The flank protection must also make searches for the enemy on the terrain.

How can it do this? It must under certain circumstances leave the armored cars, examine forests and villages, attack and disperse the enemy. This question can not be solved easily since time and force are necessary in the first place. The French mention especially the importance and difficulty of the protection of the flanks. They think of the use of reconnoitering armored car squadrons which must move at a speed of from six to eight kilometers per hour, and each squadron must search through, "comb through" from three to six kilometers of width.

It is interesting to mention that even the Frenchmen think of the protection of motorized units by the cavalry as this is still the most simple and quickest means. Anyway, this important question is still not solved. It is clear that the protection of the flanks of a cavalry division during the march is much easier and simpler as either several columns are formed or single squadrons are sent as flank guards.

#### **Protection Against Aircraft**

Protection of a motorized division on the march against airplanes is important also as the highest disaster can occur easily if the long unprotected automobile column is attacked by the enemy's airplanes by surprise. Our own airplanes must be used for protection in order to drive away the enemy or at least to report his approach. Along the whole line of march anti-aircraft batteries must be placed at certain intervals. They must relieve one another and move again quickly forward to occupy new positions.

A cavalry division can protect itself against attacks of airplanes much easier. It looks either for cover on the sides of the road or it disperses at a gallop into many small groups so that only a small, mobile target which is difficult to hit is offered to the airplanes.

A motorized division which moves in the sphere of operation of the enemy must also take into consideration that roads and bridges are sometimes destroyed and must be repaired in order to make the further movement possible. It can not move over the terrain in order to avoid this like a cavalry division can. This causes again a considerable loss of time, besides the division remains during this time immobile and unprotected.

#### **Deployment for the Battle**

From the moment the enemy's efficacious artillery fire is to be taken into consideration, that is at at least ten kilometers from the enemy, the motorized division can not move farther, as the automobile columns will soon be destroyed, or at least brought into great disorder by the artillery fire. It is seldom possible to come closer to the enemy by using additional roads or to move in several small columns protected by the terrain. Thus the troops must be unloaded, moved forward over the terrain and organized into groups for the expected battle. From this moment on the troops of motorized units have no longer a greater speed than an ordinary infantry division. On the contrary, they are more immobile as they have only a few horses at their disposal. Thus machine guns, ammunition, trench mortars, etc., must be carried by the soldiers

themselves. Telephone lines must be established and combat reconnaissance accomplished on foot only. The artillery must go into positions close to the roads and a change of position is difficult and requires a long time.

It is at these moments that a motorized division is even less mobile than an infantry division and these are frequently moments when great speed is necessary as, for example, in order to reach a section of the terrain before the enemy does so.

### Horses in Trucks

To make a motorized division mobile it must be provided from the beginning with a great number of horses loaded on trucks. Two or not more than three horses can be loaded on one truck. The French, for example, consider that a modern infantry division loaded on automobiles must carry with it at least three hundred horses in order to move forward the machine guns, infantry guns, scouts, telephone men and field kitchens. This requires from one hundred to one hundred and fifty automobiles for horses only. The division needs fourteen hundred automobiles and the column has a length of seventy kilometers. Thus it is absolutely impossible to provide the division with more than this number of horses, the others must be brought by empty trucks after the division is engaged in battle. Up to this time the division is immobile.

How much easier is it again with a cavalry division. Divided into single squadrons and batteries, protected by the terrain and, if necessary in gallop, it can move much closer and much quicker to the enemy before the troops are dismounted and forced to use their rifles.

Another difficult question for a motorized division is what to do with the great number of automobiles after the troops are unloaded. The automobiles can not stay on the road, they must be taken away, and very quickly, in order to make room for the other automobiles and not to be destroyed by enemy fire.

The automobiles must not only be brought sufficiently far to the rear, they must also be distributed, still on the roads only, and protected from the enemy's airplanes. It is indeed not easy to give correct orders for the automobiles and to find places for them. If they are wanted again they must be brought from far distances. The troops are in the mean time immobile. Then follows the loading of the troops which requires much time, and means for the troops moments of great weakness. Here also everything is much easier for a cavalry division. It can distribute its led horses into small groups and send them back at a gallop, keeping them close enough for having them at hand in case of need. The horses can easily be protected against airplanes by the terrain features or in forests. The horses can be brought to the troops quickly. The mounting and limbering up is done in a few minutes and the cavalry division moves on.

Mention could be made of other details in order to show that a cavalry division is far superior to a motorized division as far as "tactical mobility" and utilization of it on the terrain is concerned. The French have tried this experiment during maneuvers and the commander of such a motorized detach-

ment said afterwards: "Strategic mobility of my detachment is considerable, but tactical mobility is zero!"

Large trials with motorized detachments were made in 1927 also in England on a training ground for troops. It was shown there also that motorized troops work very well under certain conditions, especially in peace time and on a training ground, but that skillfully directed cavalry works with better results on the usually encountered terrain.

Thus one arm can not be replaced by the other, they both must work together.

Comparing finally the combat force of a motorized European division with that of a European cavalry division we have the following figures:

	Rifles	Machine Guns	Guns	Armored Cars	Tanks	Airplanes
Motorized division	1500	208	40	6	15	6
Cavalry division	2000	162	46	8	0	12

The combat force of the two divisions is almost equal. Cavalry can not be replaced by motorized units only. An army of the future must have both, cavalry divisions and motorized divisions, each of them must have its special purposes and the numerical proportion must be fixed.

The cavalry must of course adapt and utilize everything offered to it by the technics in order to be up-to-date and capable of accomplishing its missions. Its principle must be: "To ride in order to be able to fire and to fire in order to be able to ride."

Thus a cavalry division should be provided with armored cars to be used on roads, motorized artillery, infantry on trucks which can move on the terrain, airplanes, and under certain circumstances also with light tanks in order to increase its combat force and to use these motorized units at suitable places. The trains must also be motorized as much as possible in order to decrease the number of the horses. But the main element of a cavalry division must nevertheless be *cavalry* and *horse artillery*, quickly and easily movable over the terrain.





# Cavalry Combat Packs

By LIEUTENANT COLONEL ALBERT E. PHILLIPS, *Cavalry*

THE Combat Power of Cavalry! How little understood by the people of the country and by even the majority of military men. When we speak of infantry or of artillery we have a very definite idea in mind of the functions and even the power of these arms in battle. But few people indeed, unless they are not only students of the military art but experienced, progressive cavalymen who have handled the two elements—fire and maneuver—of modern cavalry—understand or fully appreciate the true value of this cavalry.

Everyone, according to his knowledge of cavalry, his theory, or his thoughts of the moment, places a value on cavalry. The majority of civilians have in mind mounted sabermen or mounted riflemen. Military men of other branches usually speak of cavalry in terms of mounted riflemen or mounted troops. Many have a mental picture of the World War battlefield in France with its system of trenches and wire, and others, of old fashioned, lightly armed cavalry. It gives everyone a thrill to watch a battery of field artillery galloping across country and then swing into position and action. A greater thrill awaits you if you have not seen a well trained cavalry machine gun troop at the extended gallop, across ditches, over obstacles, into action with its deadly fire in a few seconds and out of action just as quickly to another position.

For a considerable period after the World War we were told that airplanes would render cavalry valueless only to find that they have increased its value by relieving it of long distance strategic and reconnaissance missions and by assisting it in combat.

We now hear of a prospective mechanized force which "may" replace cavalry. As mechanized forces assist infantry so will these forces assist cavalry. As the air force assists cavalry from the air, the mechanized force will assist cavalry from the ground. It will relieve cavalry of many burdensome duties and further assist it by the attachment of units. But the mechanized force will not replace cavalry for there will still be unbridged streams to cross and cavalry can swim. There will be hills and valleys without roads; mud, sand, woods and other insurmountable obstacles and, the mechanized force will not be able to live off the country. In the World War mechanized forces assisted cavalry by arriving first on the scene of action and cavalry assisted mechanized forces by crossing ground which retarded the mechanized force.

Cavalry—the one swiftly moving ground force which can negotiate any form of terrain—increases in value as it makes use of its principal assets by utilizing mechanized units of equal and greater mobility.

Cavalry now has many forms of its three types of action—dismounted, mounted and combined action. When restricted solely to maneuver elements,

combat strength was dissipated by sacrificing maneuver power for fire power. One of the best ways to defeat maneuver elements is to pin them to the ground and, conversely, fire elements can best be defeated while they are moving. By adding fire elements to cavalry the maneuver elements are freed to make full use of the great power of maneuver.

The value of cavalry in reconnaissance and counter-reconnaissance is acknowledged, but its value as a fighting force in war is not fully understood. Fire and movement is the gospel of infantry and, though mounted cavalry may occasionally attack without fire, fire support is the basis of all attacks. Fire, Speed and Surprise is a good attack gospel for cavalry; for every moment's delay in the slow moving dismounted attack increases the loss of life and gives the enemy time to counter the attack. Adequate fire support is required by both infantry and cavalry.

#### **Supporting Elements and Means of Transportation**

We need not discuss the wheeled and tractor artillery of large cavalry forces nor air supporting units; we are concerned here only with the means of transport for the fire elements of cavalry and associated combat units. The fire elements of regimental cavalry are:

Machine rifle units, with fire power of each machine rifle approximating that of one light machine gun.

Machine gun units of rifle caliber.

37-m m or one Pounder Guns.

The associated integral combat units of regimental cavalry are:

Demolition units capable of considerable destructive effort, and radio communication units.

In the higher organization of cavalry we find:

Machine guns of 50 caliber, armored cars, light tanks, and horse artillery. We also find radio and telephonic communication units, requiring special transport.

The value of this combat power to cavalry largely depends on the means of transport adopted. It is quite obvious that the means of transport for all regimental units, and for brigade communication units, except special motorized units, must be similar to that which transports the cavalry soldier—the horse. Pack transportation must be used. But pack saddlery suitable for transportation at cavalry gaits has been a stumbling block for the cavalries of all armies.

Let us consider our own case:

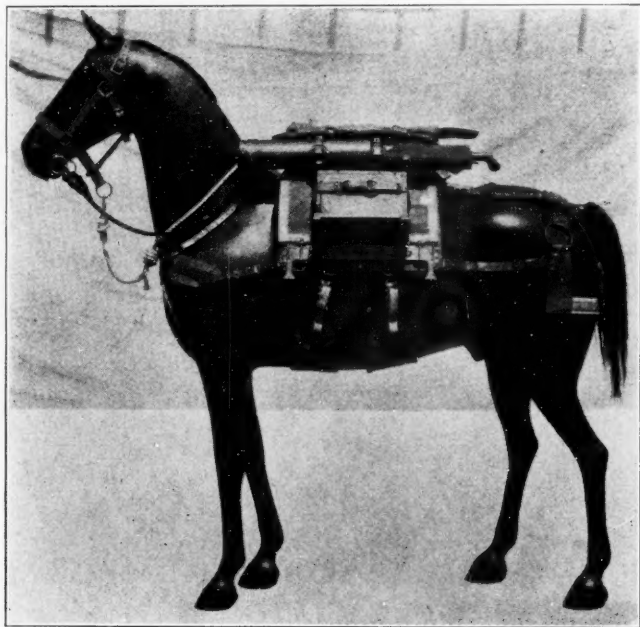
From 1906 to 1909 we conducted a three year service test of American and European pack saddles with negative results. Not finding a suitable pack saddle we continued to use the American *aparejo* for cavalry packs.

The first real war test came in 1916 when three of the four cavalry machine gun troops that marched into Mexico with the leading regiments of cavalry fell out of the columns in from seven to ten days, thus leaving three of the regiments without machine guns.

In 1917 the World War found us without pack saddlery that could be used by the newly organized divisions and we were forced to purchase carts for transporting infantry machine guns.

In 1919, upon our return from France, the War Department organized a board for testing pack saddlery and assembled pack saddles from all the important military powers and invited inventors to submit pack saddles for test. The aparejo and two other American saddles were in the test. None of the pack saddles proved satisfactory, the foreign saddles being the first eliminated.

From an intimate knowledge of the design and construction of the pack



**The Machine Gun Load**

saddles of the principal military powers it can be stated that not one of these saddles is designed to properly conserve horse flesh. We were then face to face with the problem of developing suitable pack saddlery.

The War Department accepted the writer's offer to develop a pack saddle which would be suitable for cavalry and merely directed that the saddle be of "simple but scientific design."

Development of a satisfactory pack saddle, however, only solved part of the problem—two other major parts remained to be solved; one of these was to find or develop a pad for use under the saddle. Neither blankets, canvas lined coronas nor any article commercially available was satisfactory. The writer then developed the woven mohair pad. This pad is soft, cool and prac-

tically indestructible; it shapes itself instantly to the conformation of the animal and absorbs the friction between the saddle and the animal. This pad cannot, of itself, be a cause of injury.

The remaining major part of the problem was the "positioning of pack saddle loads." Heretofore pack saddle accessories, such as hangers and carriers for loads had been designed and pack loads positioned by the supply department issuing the load. It may be stated that not one of the many loads issued was correctly positioned, and it was not reasonable to expect them to be so positioned. The "dead load" requires expert positioning as well as the "live load," and this applies with especial force to cavalry pack loads.

Equal weight on each side of a pack saddle does not necessarily result either in a balanced load or a correctly positioned load. In general, a pack load is correctly positioned when it lies close to and well upon the saddle.



**Machine Gun Pack. Phillips Pack Saddle and Accessories. A complete Fighting Unit of Gun, Tripod, Ammunition and Spare Parts**

equally balanced transversely although side weights may differ slightly and, longitudinally, a slight excess of weight placed forward of center. Longitudinal, or front and rear positioning, is of more importance than transversal balance. With the three major parts of the problem solved, there remained another problem of almost equal importance—and this problem will be present whenever the accessories for a pack load are being planned.

With the pack saddle designed and loads positioned to admit of equal mobility with cavalry maneuver elements, it was necessary to provide means for rapidly releasing and securing the loads for "speed into and out of action." As offensive action is based on the maneuver elements, the fire elements of cavalry must be equipped—as well as horsed and manned—so as never to cause delay.

The hangers and carriers for all newly designed pack loads are therefore equipped with simple, efficient, quick-fastening and quick-release devices. Devices must be designed to fill the requirements of the load.

The animals carrying the armament loads of the machine gun and the machine rifle while moving at the gallop may be halted, loads unpacked and fire opened in from eight to ten seconds.

### **Mobility on the March**

Occasionally the question is asked: Have the pack units equal mobility with other cavalry units? As a basis of action, let us first compare the weight carried by the trooper's mount and that carried by the pack horse. The *full pack* of the cavalry soldier, that is, his saddle, rifle, ammunition, etc., weighs from ninety to one hundred pounds, and, if we take the weight of the soldier at only one hundred and fifty pounds we have as a minimum, two hundred and forty pounds, on a saddle of exceptionally small bearing surface. At least ninety pounds or approximately forty percent of the weight is "dead weight," and much of this dead weight—the rifle for example—is poorly distributed.

If the McClellan saddle is of the old type with quarter straps, the muscles of the horse under the cantle of the saddle are so constrained and bound that the horse cannot travel at natural gaits.

Now for the pack horse—the pack horse is equipped with a saddle of considerable bearing surface for the load carried—this bearing surface grip reduces the "grip" required of the cinchas, therefore minimum cinch pressure is required. Cinch pressure is applied mainly on the front cinch, thus allowing the rear of the saddle to swing or move both transversely and vertically *with* the hind or propelling members, just as the officers' saddle swings.

The authorized pack load is approximately one hundred and forty-six pounds of a total weight of two hundred pounds over the weight bearing parts. While this is a dead load, it is distributed over a greater bearing surface and better positioned than the total load on the trooper's mount—and weighs at least forty pounds less.

Mobility of our new pack units now largely depends upon proper selection and training of pack horses and pack teams. If we assign the "culls" to carry the packs we cannot expect even average marching or maneuvering ability from pack units. •

As the troopers of our fire elements and other pack units do not carry rifles, sabers, rifle ammunition, etc., their horses carry much less weight than the horses of the rifle trooper, therefore the pack units should outmarch the full pack rifle units. But do not burn up the energy of the pack horse by requiring it to remain loaded at every halt, while the trooper's mount is unloaded. Remember, it is not the length of the march but hours in the saddle that kills. If there is not time to remove the load at halts the cinchas may be released quickly by the quick release devices.

On ordinary marches, herding the pack animals will relieve both riding and pack animals and, as pack animals should not ordinarily be halted except

for water or to adjust a pack, the pack units will arrive in camp far ahead of the rifle units. Do not make the comparison here between cavalry and cargo pack trains for our cavalry pack units move at cavalry gaits.

#### **Mobility in Maneuver**

Our pack units have equal mobility in maneuver with other cavalry units. One of the most interesting demonstrations witnessed by the writer was given by Major Merchants' Squadron of the 8th Cavalry with Captain C. R. Johnson's Machine Gun Troop of the 2nd Machine Gun Squadron attached, in the 1923 maneuvers of the 1st Cavalry Division. These troops made an extended gallop for approximately one mile, over mesquite covered ground, with the pack animals frequently jumping over the bushes, ditches, etc.—No packs were lost.





## TOM'S LETTER

Dear Ed,

Well I was reading the other day about where in there daily holdup in Chicago the bandits used Machine Rifles to intimate the usual crowd of delighted spectators. Ed, there is something fishy about that on account of I dont believe that them bandits was cavalryman and cavalryman are the only ones which are required to use the machine rifles. Its funny what a bunch of pretty smart fellows like you and me and Foch devote all our lives to thinking up weapons of destruction when Nature has provided us with so many in the 1st place. Take the verbal dart for inst. which is a wise crack made vive voce. Why just the other day I was saying to a girl how fair minded I was and that I could see good in anything. Well, she says, you cant see good in the movies when you first go in can you? But then Ed wise cracks is getting so common in the young generation I was almost afraid to bring home a easter bunny at easter to give to my kid so I says Now listen, this is a easter bunny and I want no wise cracks from you.

No sir, Ed, the mouth is a great verbal weapon—not that we cavalryman say much especially these days that the air service has the air so to speak. We are like the woman which had got a bushel of clams which she put in the basement. The next morning every clam had caught a mouse. You can easily see that that illustrates something—I wouldnt know what except that there is something in being a clam if you want to catch a mouse. Many a man can talk his way out of smething into which he has got himself into. Talking is pretty safe because not many people ever listen to you but are just waiting till you stop so that they can start talking. Take Leavenworth for inst. if we had of listened to everything which the teachers said we would now know all they know and wouldnt have been humiliated with so many U's. If people wasnt allowed to talk until they had something to say—well Ed, you guess what would happen to Congress and to the Service Schools, and what would it be like living with the little wife? Dont ask me Ed, I wouldnt dast say.

The hard thing for many people to understand is how the horse can be regarded as a weapon against anybody else except the person which rides it. That shows Ed how little the "desund des mains" is understood—it and equitation in general. Suppose you was a enemy pivot of maneuver Ed armed with 1 of them machine rifles and suppose Ed you happened to look up from trying to hold it down somewhere near the ground and suppose you was to see our maneuvering force come cantering in proper balance doing "haunches out" well Ed I bet you would be scared. There is still some opposition to the sabers but thats silly when you think of the moral effect of the sun shining on the cavalrymans flashing saber when we was charging behind the cavalry tanks. All is not old that titters Ed and remember that morals is to the physical as 3 is to 1. Many people say that Cavalry dont charge no more but the local merchants says that isnt so and what is needed of cavalryman is a little more collection. Just the other day a wise John wrote a editorial in the Chicago Tribune saying "Cavalry wont have no more need for his spurs" on acct of the cavalry being moved in trucks, etc, etc. I laughed over that Ed because as long as theyse horses spurs will be used to hold on with and to prove that officers is in the cavalry.

A fellow whispered to me at dinner the other night just as the waiter was giving me the meat course, he says Tom, save your best fillets for brood mares. Well Ed he might have fooled me once but I was too smart now so I whips back Yr loopy big boy cause brood mares dont eat meat and I know it. Everybody laughed at him Ed so you can see the old nimbled wit is still with me.

Yr friend TOM.

## Topics of the Day



### Army Polo

By THE ARMY CENTRAL POLO COMMITTEE

ORDERS were issued by the War Department for the assembling of the following named officers at Mitchel Field, Long Island, as the Army Polo Squad for 1928:

Major George S. Patton, Jr., Cavalry, Office of the Chief of Cavalry, Washington, D. C.

Major C. C. Smith, Cavalry, Fort Leavenworth, Kansas.

Captain George E. Huthsteiner, Cavalry, Fort Sam Houston, Texas.

Captain Candler A. Wilkinson, Quartermaster Corps, Fort Reno, Oklahoma.

Captain Chester E. Davis, Cavalry, Fort Bliss, Texas.

Captain Peter P. Rodes, Field Artillery, Fort Bragg, North Carolina.

Lieutenant Morton McD. Jones, Cavalry, Fort Bliss, Texas.

Captain Charles H. Gerhardt, West Point, N. Y.

Lieutenant Mark McClure, Sixteenth Field Artillery, Fort Myer, Virginia, was wanted for the squad, but is not available for the detail.

Major G. S. Patton will captain the team that defends the Junior Championship title won by the Army last year. Major Patton represented the United States in the Modern Pentathlon at the Olympic Games at Stockholm in 1912. In this event Major Patton was awarded fifth place, in a field of forty-two competitors, the first four places having been won by Swedish entries. He is an experienced polo player. He was a member of the Army Squad that played on Long Island in 1921. Later he played in Washington while stationed at Fort Myer. In 1926 he captained a team which won the Inter-Island Polo Championship in Hawaii for the first time since 1912 when, with the arrival of the Fifth Cavalry at Schofield Barracks, an Army team first entered the annual competition. Major Patton's string of private mounts will enable him to be well mounted.

Major C. C. Smith, a hard rider and bold player, joined the Army team on Long Island last summer for a few weeks. Major Smith was a member of

the Fort Leavenworth team that won the Inter-Circuit Championship, and the Twelve Goal Championship in 1926. For the past few years he has played on the Fort Leavenworth and Cavalry School teams in the Rocky Mountain Circuits, at Fort Snelling, Kansas City, and elsewhere. Prior to this he played at Fort Bliss, Texas.

Captain Peter P. Rodes, captain of last year's Army team, has had a wide polo experience in recent years. In 1925 he went to England on Major L. A. Beard's team that won for the second time the British-American International Military Championship. Last summer he led the Army team on Long Island that competed creditably in the Open Championship. Captain Rodes is a graduate of the United States Naval Academy, where he captained the Navy football team. He first came into prominence as a polo player at Camp Grant, Illinois, in 1921, when his team won the Mid-Western Circuit Cup and the Westleigh Cup. During the past winter while on duty with his battery at Fort Bragg, North Carolina, he has found time to work on some prospective mounts for the Army team.

Captain C. A. Wilkinson needs no introduction to the polo world, having achieved the distinction last summer of being the first Army officer ever named a member of the American International Squad. Captain Wilkinson first gained considerable polo experience on the Pacific Coast in 1921. He came east as a member of the 1924 Army team. In 1926 he played on the Fort Leavenworth team that won the Twelve Goal Championship and the Inter-Circuit Championship. Last season he led the attack of the Army Junior Championship team, and of the Army team that played in the Open Championship. He also played on the 1927 Cavalry School team in the Twelve Goal Tournament. His spectacular play stamped him as one of the most colorful players ever developed in the Army. By virtue of his phenomenal progress on Long Island last year, he was boosted from four to seven goals handicap by the United States Polo Association, a handicap only held in the Army by Captain Wilkinson and two of his teammates, Captain Rodes and Captain Gerhardt. During the past winter Captain Wilkinson has been on duty at Fort Reno, Oklahoma, where, in addition to his other duties, he has aided materially in the special training of mounts.

Captain Charles H. Gerhardt, a member of last year's Army team, is an all round athlete by instinct and training. After his West Point days, when he played on the varsity football, baseball, and basketball teams, he turned his attention to horsemanship and polo, along both of which lines he has been uniformly successful. His playing at Fort Riley in 1924 attracted the attention of Major L. A. Beard who took him to England in 1925 as a member of the United States Army team, which defeated the British Army team in the second British-American Military Championship Tournament. In 1926 and 1927 Captain Gerhardt played prominently on the Army Junior Championship team. His most recent accomplishment in polo was his leading of the West Point Officers' team that won the Class A Indoor Championship of the United States.

Captain George E. Huthsteiner played back on the Army Junior Cham-

pionship team last year, and the team entered by the Army in the Open Championship. He also played on the First Cavalry Division team which won the 1927 Twelve Goal Championship, and the Inter-Circuit Championship and Twelve Goal Championship in 1925. Captain Huthsteiner has been stationed in Texas for a number of years, and, therefore, has had an unusual opportunity to play continuously year in and year out. During the past winter he has been playing on the Fort Sam Houston team in the San Antonio Mid-Winter Tournament. He is a sturdy and experienced player.

Captain Chester E. Davis has reached the Army Squad by way of the Inter-Circuit Tournament. After having played on the Cavalry School and Fort Leavenworth teams during the past few years, he came east last summer as a member of the First Cavalry Division on teams that won the Twelve Goal Championship and reached the final in the Inter-Circuit Tournament at Narragansett Pier. In February and March of this year, he played on the Cavalry Division team that won the Southwestern Intra-Circuit Championship and Southwestern Handicap Elimination Tournament at San Antonio, Texas. Reports from those tournaments indicate that his playing during the past winter has been uniformly dependable.

Lieutenant Morton McD. Jones is a young player of promise who started his polo in Germany. For a number of years he played in San Antonio on the Eighth Corps Area Headquarters team. In 1926 he accompanied an Army team to Mexico City where the Americans were successful in winning all of their games. The following year he played civilian polo at Colorado Springs with the Houston Polo Club, and at Denver with the Denver Club. This past winter he has been in California with a First Cavalry Division team. Lieutenant Jones is an accurate stroker.

The above list will permit of a new team being trained for the National Junior Championship Tournament. This will give an opportunity for the training of further players and will widen the pool of selection for the British-American International Military Matches, probably next year. Captains Rodes, Wilkinson, and Gerhardt are included to form the nucleus of a team for the Senior Championship, Open Championship, and other high goal events, in order that they may have the added experience of one more season of fast polo prior to the British challenge. It is quite possible that some of the lower handicapped players brought on this year will give them a hard run for their places on the team.

In connection with the next British-American Military Tournament, which may be played in 1929, it has been suggested that the British and United States Armies be represented by the champion regimental teams of the respective services, rather than by an all-Army team as in the past. While such representation may be desirable in Great Britain, it is not looked upon with favor from our point of view. The excessive distances separating some of our regiments, the interruption of training that would result, make almost impossible the holding of any kind of a tournament necessary for the determination of the championship regimental team of our Army. Also, the

constantly shifting personnel of our American regiments prevents that permanency of line-up which is conducive to the quality of polo desired in international tournaments. Accordingly, the Committee does not share the opinion that the International Military Tournament would fulfill the purposes for which it was inaugurated in 1923, were it to be limited to a match between regimental teams representing the two countries.

Army polo enthusiasts are gratified over the success of the Cavalry Division team from Fort Bliss in the recent San Antonio Mid-Winter Tournament. Major Terry Allen led his four through the 1928 Southwestern Intra-Circuit Tournament and the 1928 Southwestern Elimination Handicap Tournament, winning both, thereby repeating the feat of the team which represented the Cavalry Division in 1925 and 1927. As a result the Southwestern Circuit will be represented by an Army team in the Inter-Circuit Championship to be held in Cleveland, Ohio, during the coming summer. In commenting on the play of his team, Major Allen stated "the principal asset of the team was its well balanced team-work." This opinion was confirmed by all who saw the games.

The Cavalry Division team lined up as follows:

Captain C. E. Davis.....	No. 1
Major Terry Allen.....	No. 2
Captain T. E. Voight.....	No. 3
Captain C. L. Stafford.....	Back

The scores for the Southwestern Intra-Circuit Championship were:

Air Corps Training Center 11	Twelfth Field Artillery 4
First Cavalry 13	Fifteenth Field Artillery 6
Fifth Cavalry 19	Fredericksburg 8
Austin 22	Stonewall 16
Camp Wood 13	Eighth Corps Area 12
Cavalry Division 15	Alamo Freebooters (San Antonio) 9
Air Corps Training Center 6	First Cavalry 5
Fifth Cavalry 12	Austin 11
Camp Wood 11	Ninth Infantry 8
Cavalry Division 10	Abilene 9
Air Corps Training Center 6	Fifth Cavalry 3
Cavalry Division 14	Camp Wood 11
Cavalry Division 12 (final)	Air Corps Training Center 9

The Southwestern Elimination Handicap Tournament resulted in the following scores:

Air Corps Training Center 24	Fifteenth Field Artillery 6
Fort Sam Houston 12	Alamo Freebooters 9
Twelfth Field Artillery 9	Stonewall 7
Fifth Cavalry 7	Austin 6
Fredericksburg 19	Ninth Infantry 4
First Cavalry 5	Abilene 4
Cavalry Division 14	Air Corps Training Center 7
Fort Sam Houston 20	Twelfth Field Artillery 7
Fifth Cavalry 13	Fredericksburg 6
Cavalry Division 16	First Cavalry 10
Fort Sam Houston 13	Fifth Cavalry 8
Cavalry Division 10 (finals)	Fort Sam Houston 9

In a letter from Mr. F. S. O'Reilly, Secretary-Treasurer of the United States Polo Association, received recently, the Committee was informed that the Open Championship will be played at Meadow Brook Club in September. The Inter-Circuit and Twelve Goal events will be played at Cleveland, Ohio, approximately the last two weeks in August. The time and place of the Junior Championship have not been decided. With reference to the Junior Championship, the Committee has recommended that it be played on Long Island during the month of July.

Colonel Henry C. Whitehead, Quartermaster Corps, has been designated at the Polo Representative, Eighth Corps Area, Fort Sam Houston, Texas, to succeed Lieutenant Colonel William F. Jones, who has been relieved from duty at Eighth Corps Area Headquarters. Colonel Whitehead's experience in matters pertaining to the horse and his interest in polo assures a continued enthusiasm in the game in the Eighth Corps Area, which boasts of more actual play, the year around, in the number of teams participating in games, than any other part of the country.

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### Two More Types of Guns for Cavalry

UPON recommendation of Major General Herbert B. Crosby, Chief of Cavalry, two new weapons are to be added at once to the armament of cavalry regiments. They are the 37-mm guns for employment against hostile armored cars, light tanks and machine gun nests, and the anti-aircraft machine guns mounted on cross-country cars. These two types of weapons are to augment the machine guns of the regimental machine gun troop. The anti-aircraft section of the machine gun troop will be equipped with three cross-country cars upon each of which is mounted an anti-aircraft machine gun, and the one pounder section will be provided with three 37-mm guns packed on horses. As it is possible that all cavalry of the future will have mobile tanks, the inclusion of one-pounders to combat these tanks becomes imperative.

The addition of these two weapons to the already greatly increased armament of cavalry, with its recently doubled artillery fire-power, is in keeping with the constant endeavor being made by the Chief of Cavalry to utilize most advantageously all mechanical devices particularly suited to mounted combat. Other weapons recently authorized for the cavalry are:

Armored car squadron  
Light tank company  
Air service.

The armored car squadron is a distinct addition to the new war strength cavalry division. It consists of a squadron headquarters and three armored car troops, with a total strength of thirty-six armored cars. The personnel provided is eighteen officers and two hundred and sixty enlisted men. The troop of twelve armored cars is organized into three platoons of four armored



cars, with a troop personnel of five officers and eighty-four enlisted men. In peace-time but one troop will be authorized for the cavalry division. Although armored cars were used but little during the World War, it is evident that they may prove of great value for cavalry, particularly on reconnaissance, advance guard duty and screening. It is thought that our armored cars should be highly mobile, of light or medium weight with comparatively light armament. The armor will be proof against small arms only, so the cars will depend principally upon mobility for their protection. Undoubtedly armored cars will increase the radius of reconnaissance and save horse flesh for cavalry under some circumstances.

The recent addition of the light tank company to the cavalry division, both in peace and war, is also of importance. It is believed the light tank now being developed by the Ordnance will be sufficiently fast and mobile for use with the Cavalry. To be of value for such use it should be capable of twenty-five to thirty miles an hour on roads and twelve to fifteen miles an hour across country.

Experience in the First Cavalry Division, Fort Bliss, Texas, has indicated that an observation squadron of airplanes should be an integral part of a cavalry division. Heretofore it has been planned to attach such a squadron whenever necessary. This has proved unsatisfactory and a division air service now has been incorporated into the cavalry division organization, both war and peace strength. This air corps unit consists of an observation squadron of thirteen airplanes and a photographic section. The War Department is of the opinion that the battle value of cavalry increases with the breadth of vision bestowed by aircraft. In future operations, the air service will save cavalry by making distant reconnaissance and by early indication to the cavalry of the location of hostile enemy forces to be engaged. It will also furnish mounted troops valuable assistance in reconnaissance of routes.

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### Mechanization of Combat Forces

**M**ECCHANIZATION of battlefield forces is the subject of an extensive official study which recently has been completed in the General Staff of the War Department. This study has not received such definite approval as to constitute a doctrine, but undoubtedly it portrays some basic considerations which will govern further study and experiment throughout the service.

The basic theme of the study is the question of how mobility with high striking power can be restored to the battlefield. Tremendous strides have been made by science and invention in transportation and communication, and mobility has become one of the outstanding developments in modern economic life. Each year people travel farther and get there quicker, through motorization.

This has brought military science and tactics to a turning point. The two elements necessary to decision in land warfare, from the days of the chariot and javelin of Alexander, have been fire superiority and movement. Whenever either fire or movement neared a point of impotency a radical change has been made in the tactics to strengthen the weaker element.

Movement has always been of great value since the days of armored knights, when battles were won almost without fire, and due principally to movement alone. The World War witnessed the reverse. Fire power, beginning with the invention of gunpowder, steadily increased with high explosives, long-range artillery and automatic weapons. The World War, especially in France, found fire power so highly developed that the costliness of tactical movement made it prohibitive at times.

The sensational advances of the automatic industry in the past ten years have opened the subject of mobility to new studies by military leaders throughout the world. American military students naturally study the subject from the standpoint of means whereby our military forces may use to best advantage the predominant position held by our commercial automotive industry.

These studies indicate that the element of movement, with its companionate principle of surprise, may be restored to battlefield tactics by some degree of mechanization.

The basic principles of war remain immutable, but these studies reveal the possibility of new methods of application for those basic principles. The basic principles include the principles of mass, economy of force, movement, surprise, security, simplicity and cooperation. The development of a mechanized force for employment in battle would utilize to some degree all these seven of the nine principles of war. The study suggests changes in methods and doctrines of training for employment of the mechanized force under the basic principles. Therefore, an intensive study of the development of a mechanized unit and experimental work in operation of such a unit will entail a study of possible revisions of the tactics and technique of the separate branches.

There is a distinction between mechanization and motorization in this study. Mechanization is defined to be the application of mechanics to the combat soldier on the battlefield, with a view to increasing his mobility and his protection and striking power.

Motorization of the supply branches; that is, substitution of motor-propelled for animal-drawn vehicles in the supply echelons, presents little difficulty from the procurement point of view. Commercial development in the United States of the automobile would permit a comparatively simple process of change-over from peacetime to military requirements in an emergency. Special bodies for cars and similar changes would create no problem to the manufacturers. The personnel problem likewise is solved by the civil-life training of man in handling of automobiles.

The study, then, is limited to combat tactics and the utilization of a mechanized force on the battlefield.

### Motors Will Not Displace Infantry and Cavalry

**T**HAT complete mechanization or motorization of armies is impossible and that infantry and cavalry divisions must continue to form the bulk of land forces in war is indicated by studies made in the War Department General Staff.

Radical changes in the methods of employment of infantry and cavalry, and in their organization and equipment may result, however, from the introduction into armies of certain completely mechanized units. Complete motorization of an army, which would mean completely doing away with animals except for cavalry, is not viewed as a possibility in the present stage of automotive development. Furthermore, the limitations set by weather, terrain and vulnerability have caused the officers who are studying the problem to arrive at the conclusion that complete mechanization would be undesirable as well as impracticable. Infantry and cavalry may in future, however, expect improved weapons and more of its transport in keeping with developments of a motorized age.

Mechanized units of great fire power will restore movement on the organized battlefield. This element of movement has been gradually disappearing since the invention of gunpowder.

Such mechanized units, the studies reveal, will not only have greater marching speed, but will greatly exceed the sustained cross-country speed of present troops. The advantages attributed to a mechanized unit include increased mobility, increased protection, increased fire power, increased offensive power and decreased casualties.

The mechanized unit would provide shock troops of great striking power and limited holding power. It would relieve the infantry and cavalry from functions of attack in certain critical situations that under present conditions prove most costly in human life to the attack force. In such attack the mechanized unit would give its own operating force better protection than possessed by present attack units due to the characteristics of both mobility and shelter. After an attack by a mechanized force the infantry could advance through lessened hostile resistance to consolidate and hold gains in ground.

Increased fire power would be provided for a mechanized force through its ability to utilize more automatic weapons, to transport more ammunition with each weapon, and the ability to maintain supply of ammunition in cross-country vehicles of greater speed than animals.

Elements considered in the study of mechanization include the light tank with effective speed; armored cars for cavalry divisions; an effective reconnaissance car and other special units.



### Army Officers to Specialize in Motor Mechanics

**I**NDICATING that the rapid progress in motorization makes it mandatory that the training of army officers as motor mechanics should be emphasized, Major General Charles P. Summerall, Chief of Staff, has stated—"At

an early date a situation must be reached where there will always be available officers for assignment to motorized units who have had courses of instruction and have qualified as expert motor mechanics."

To provide these expert motor mechanics, the Secretary of War has authorized the establishment of an advanced motor transport course at the Field Artillery School, Fort Sill, Oklahoma, and the Coast Artillery School, Fort Monroe, Virginia, beginning with the next school year, for a number of selected graduates of the Battery Officers' Courses of the preceding school year.

It is thought that the needs of the cavalry, with respect to motor transportation, in view of the wide assortment of vehicles with which that arm may at some future time be provided, will best be met for the present by sending specially selected cavalry officers to attend the various courses in motor instruction at other service schools. The Secretary of War, therefore, has authorized seven cavalry officers be distributed approximately as follows for the school year of 1928-29:

The Quartermaster Motor Transport School, Camp Holabird, Maryland—4 officers.

The Field Artillery School, Fort Sill, Oklahoma, Advanced Motor Course—1 officer.



### Basic Principles for Experimental Mechanized Force

THE War Department has instructed the Commanding General, Third Corps Area, that in planning the work of the Experimental Mechanized Force, which will be assembled at Fort Leonard Wood (Camp Meade), Maryland, about July 1st, the following basic principles will be followed:

"The completely mechanized force is a self-contained unit of great mobility, great striking power, and limited holding power.

"It should not be considered as a divisional unit but rather, because of its special characteristics, as a force of special mission in the accomplishment of which and in exploitation of which troops of infantry or cavalry divisions will cooperate.

"The role of the mechanized force is essentially offensive.

"Tanks are principal attack elements of the mechanized force.

"The tactics of the force as a whole shall be predicated upon supporting and assisting the attack of the tank elements, and upon quick consolidation and securing or exploiting the success gained in the tank attack.

"Other arms are added as auxiliaries, to furnish the element of holding power which tanks lack, security, maintenance of command, fire support, facility of movement, and supply.

"Surprise, speed, and depth of penetration in the attack should characterize the operations of a mechanized unit. Its tactics should be devised to assure these.

"All members of the force should be imbued with a spirit of the utilization of the speed which modern equipment will afford.

"The force should be regarded as a tactical as well as technical laboratory. While it will have to operate this year with considerable obsolescent automotive equipment, it is nevertheless expected that much information as to tactics and technique will be derived which will be of benefit to further development.

"The capabilities and limitations of such a force should be studied not only in the light of the bulk of obsolescent material furnished this year, but also in the light of a force equipped throughout with material of the more modern experimental types furnished. For this purpose the four MI tanks to be furnished should be used to the maximum."

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### Tactical Work of Experimental Mechanized Force Outlined

IN conducting the tactical work of the Experimental Mechanized Force which is to be organized at Fort Leonard Wood (Camp Meade), Maryland, about July 1, 1928, the War Department has informed the Commanding General, Third Corps Area, that it is thought the development of technical methods for application by such a force to tactical problems is of greater importance than the solution of the tactical problems themselves.

To this end, thought and experiment will be directed by the commander of this force along the following lines:

*"Route Marches.* Proper methods; grouping and subdivision of column; relative speeds; economical rates; capabilities on roads of varying character; capabilities off roads; supply on the march; camping and bivouacking methods; special methods and training necessary for night marches; duties of engineers in facilitating the march; equipment needed.

*"Marches in the presence of the enemy:* Means of reconnaissance; means of security; liaison with air units; anti-aircraft security and defense; liaison and maintenance of command in the marching column; tactical subdivision of the force on the march; security within the force itself; the use of the mechanized force as a security detachment for troops of other (present day) characteristics; value of the motorcycle, cross-country car, armored car as security elements.

*"Reconnaissance:* The employment of means within the force to obtain information prior to engagement; the motorcycle, cross-country car, armored car; means for rapid communication with Air Corps.

*"Command:* The means of insuring command in a force of this character; character of command posts moving or fixed; the means of communication to be employed; liaisons to be maintained between components of the force; organization of the command and staff of the force and its components to assure rapid handling of intelligence; rapid decision and formulation of plan, rapid transmission of order; effectiveness of supply.

*"The tactical methods of the force in the approach alone or when carried*

by other forces. Approach formations; front and depth required for development and deployment; methods of concealment from ground and air; methods of diminishing noise; conduct of approach march; security and information during the approach; functions of auxiliary troops, engineers, signal, etc., during the approach; order of components in the approach; initial positions of artillery; disposition of rear echelons; the best means and weapons for supplying smoke screens in the attack of mechanized units.

*"In the attack:* Formations, width, depth of the tank attack; cooperation between neighboring tank units; missions for light tanks; missions for medium or heavier tanks; liaisons to be maintained by and with tank units; special tactics to take advantage of the speed of modern tanks, based upon experiment with four MI tanks to be furnished; command of tank units in the attack;



**New Czechoslovakian Tank with Wheels and Tracks**

security elements; means for protecting flanks; combat patrols, composition and equipment; battle reconnaissance.

*"Fire support:* Character of artillery supporting forces; methods of maintaining contact with advancing tank elements; methods of maintaining adequate observation; methods of displacing forward to continue to cover an attack of rapidly moving elements pushed to great depth; transference of artillery liaisons to the infantry when that force has relieved tank elements in the attack or is consolidating ground won; ammunition supply within a mechanized unit; method of maintaining liaison with the force command when the latter is moving; tests of fire of artillery in defense against tanks using salvaged tanks.

*"Infantry support:* The organization, tactics, and equipment which infantry will need to enable it to support the tank elements rapidly and without causing the latter to lose advantage of modern tank speed; methods of quickly mopping up; methods of rapidly advancing machine guns and other infantry weapons, wire, intrenching materiel; organization of the infantry command;



liaisons with other components of the force; defense against tank attack, including tests of fire of infantry weapons particularly the latest 37-mm gun as an anti-tank weapon, against salvaged tanks at your disposal.

*"Engineers:* What should be the special equipment of the engineer component of a mechanized unit? Can they assist the advance of such a unit with improvised materiel? What should be the span of bridge materiel with this force? What tools are needed by these engineers? What character of transportation is needed?

*"Supply, Administration, etc.* Division of units into combat and supply echelons; methods of handling the latter; should they be grouped and administered by one officer at one place location near echelons on the march; in combat; field repair of automotive materiel; where accomplished; vehicles needed; character of repairs to be sent to motor repair shops; supply of oil and gas to tanks during course of operations; vehicles needed; economy of personnel at rear echelons; ammunition supply of mechanized unit, control; method."

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### Keeping Horses in Condition at Low Cost

By WAYNE DINSMORE, *Secretary, Horse Association of America*

MORE than one hundred farmers, noted for having good horses and mules that are kept in excellent condition at low cost, have recently sent reports to the Horse Association of America on their methods of feeding and management.

The thing that stands out most prominently in these reports is the use of pasture to reduce maintenance costs and the further fact that the horses are turned out whenever not at work—either in dry lot, before grass is fit to turn on, or in pasture after the grass is past the washy stage. Many report using good, bright oat straw as part of the roughage, supplementing this with some timothy hay and a feeding of alfalfa or clover hay three times a week.

Such leguminous hays are fed for their tonic effect on the kidneys and bowels. Alfalfa or clover, fed in amounts approximating five pounds per animal three times a week, have a tonic value far in excess of their actual food nutrients. Alfalfa is the better of the two, but clover can be used where alfalfa is not available. In either case, the hay should be clean and free from dust. If dust is in it, it should be shaken out thoroughly before the hay is placed in the manger.

The majority of farmers prefer oats, although some are using corn as a part of the ration. The amount fed per day when horses are at hard work is from 1 pound to 1 $\frac{1}{4}$  pounds per hundred pounds live weight of horse. Thus, a 1,600-pound horse will receive from 16 to 20 pounds of grain per day. Nearly all report that they cut the grain ration in half on days when horses are idle, and the majority emphasize the importance of having barn lots sloping, preferably to the south.

Emphasis is also placed on having well-drained barn lots where the horses can be turned out and have reasonably dry footing, even immediately after a rain. Many make mention of having hay racks in the barn lots, where oats, straw and some hay can be placed for the horses to eat when out in the lot, the idea being to have the horses turned out in the barn lot during the spring, when they will get fresh air and sunshine, and will be provided with roughage to eat before the pastures are sufficiently far along to permit turning on them.

The value of sunlight is now generally recognized, and turning idle horses out in the barn lot promotes their health and reduces the labor involved in caring for them. Many farmers report that they turn the horses out in the barn lot at night during April and May after the horses have had their evening feed; as they say that the horses go out and roll, stretch, feed for a while from the hay racks, and then lie down and rest more comfortably than if they were tied up in the barn. This reduces the work of cleaning out the stables to a negligible point, as the horses are in for only a couple of hours in the morning, an hour at noon, and a couple of hours at night.

Pastures are used by virtually all men having low costs on horses and mules, but nearly all reporting declare that they do not turn out until the grass is fairly firm, as they do not want to put the work animals on pasture at a time when the grass is so green that it will scour the animals.

Another point emphasized by many farmers is that, for the first week of pasture they turn the animals out for only an hour at night and then put them back into the dry lot; for, as one farmer expressed it, they "do not want the horses to have too much green grass for the first week or ten days, but try to taper them into it gradually." After becoming accustomed to it, the horses are turned out on pasture all night, five or ten acres near the barn being reserved exclusively for the use of the work animals at night and on days when they cannot be used or are not being used in harness.

Many farmers emphasize the fact that the first part of April is the time to reinforce pastures for horse use and many advise disking lightly—with disks set fairly straight—the small pasture that is being reserved for horses and then sowing a combination of grasses. Where sweet clover or alfalfa do well, these generally are sown; and some brome grass, timothy, red top, blue grass, and other grasses known to do well in any given locality are put together in a mixture, which is sown on such pastures.

The land is then cross-harrowed with a spike-toothed harrow, slanting slightly and loaded down with plenty of weight. This covers the seed which has fallen in the disk marks; and many farmers report that after disking, seeding, and harrowing, they spread five or six loads of sheep manure or well-rotted cow manure over such pasture, which is then held free from stock of any kind until June first. Then horses are turned on it. Where soil is sour, it is well to add lime before seed is sown.

As one farmer expressed it, "old pasture treated in this way will produce twice as much feed as other similar pasture untreated." Thousands of farmers may well consider the methods suggested by the practices of these successful

farmers, who are noted not only for having good horses but for keeping their animals in good condition at low cost.

Many of these men report their annual costs to be less than \$60, which they attribute largely to the fact that they cut the grain ration in half when the horses are not working, do away with it entirely where the horses are idle for several days, utilize dry lots and pastures to cut barn labor to a minimum, and carry idle horses through the winter on corn stover and oat straw without the use of any grain whatever in the case of mature horses. Young growing animals, however, receive some grain.

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### The Slocum Trophy

LIEUTENANT Colonel Stephen L'H. Slocum, U. S. A. Retired, has presented the 8th Cavalry with a handsome trophy as a token of the esteem in which he holds the regiment in which he served for many years.

The trophy is to be awarded each year to the troop of the 8th Cavalry considered the most proficient in mobility, fire power and shock. It has been suggested that it be awarded to the troop selected each year as the regimental entry for the Goodrich Trophy Training Test. Or, providing more than one troop of the 8th Cavalry takes part in the Goodrich Trophy Training Test, to the troop of that regiment making the highest score in the above test.



**The Slocum Trophy**

The trophy is the bronze statuette "Pursued" sculptured by A. Phimister Proctor; height 17 inches, plinth  $13\frac{3}{4}$  inches by  $4\frac{3}{4}$  inches; mounted on a black Belgian marble base, 20 inches by 7 inches; with a cast bronze plate 18 inches by  $\frac{3}{4}$  inch in front with the inscription "SLOCUM TROPHY" in raised letters and a wrought bronze plate 18 inches by  $\frac{3}{4}$  inch in rear engraved "presented to Eighth Cavalry by Colonel Stephen L'H. Slocum" and "Awarded to Troop 'E,' 1927." A glass case with bronze corners accompanies the trophy.

### Biltmore Forest-Asheville Horse Show

THE Biltmore Forest-Asheville Horse Show, held at Asheville, N. C., on the 17th and 18th of April, was one of the leading equestrian events held in the South this year. Entries in the show came from practically all of the southeastern states and from many of the more northern states.

All records were broken for total number of entries, wide-spread interest and representation shown by the spectators and the excellence of the horses entered in the event. In one class of the show at least three champions of other southern horse shows were entered. Two hundred and forty entries were recorded for the various events and in addition to the civilian entries the United States Cavalry was represented by the Sixth Cavalry delegation from Fort Oglethorpe, Georgia, Troop F of the National Guard at Asheville and



George Bryson, Jr., on Moonshine

by the National Guard Troop from Statesville, N. C. The cavalry units were an important part of the show, the cavalry horses being entered in the hunting classes, the special officers' charger class and in several of the horsemanship and gaited classes.

In the high jumping class Lieutenant Comfort of Fort Oglethorpe won first and second places with *Red* and *Babe*, Sixth Cavalry horses, while third place was taken by *Douglas*, ridden by Corporal Daniels of the Statesville National Guard Troop. In the hunters' class Lieutenants Ireland and Comfort took second and third places, respectively. Lieutenants Ireland and Comfort won first and second place in the polo ponies class. The Sixth Cavalry also carried away the laurels in the officers' charger event with Lieutenant Ireland first, Colonel Henry Coates second and Lieutenant Stovall third.

A unique performance was that of George Bryson, Jr., five year old son of Sergeant Bryson of the North Carolina National Guard at Asheville, N. C., who carried away all three prizes in the children's jumping class. Young Bryson was matched against seven other contestants and was the only one to negotiate the jumps. He rode a full grown cavalry horse, *Moonshine*, in this event.



### 1st Cavalry Notes

ON February 27th the regiment was reviewed and inspected by the Division Commander, Brigadier General G. V. H. Moseley.

On March 3rd the Chief of Cavalry made his annual visit, and was tendered a review.

The annual training inspection was conducted on May 11th and 12th; the Corps Area Commander, Brigadier General Albert J. Bowley, the Division Commander, Brigadier General G. V. H. Moseley, and the Brigade Commander, Brigadier General LeRoy Eltinge, were all present. The first day was devoted to review, drills, and inspection of barracks and stables. On the morning of the second day the regiment participated in a problem held on the Mitchell property east of the post. To the regiment was attached Battery A, 82d F. A. Battalion (horse) and one plane. The enemy was outlined and to it was attached one plane. The battery moved to Marfa from Fort Bliss by truck, bringing materiel and personnel only. Horses were supplied for the officers by the regiment; for draft and other use mules from the post supply were used and even with the unaccustomed motive power the battery functioned in excellent fashion both in the review and in the field exercise.

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### Organization Day, 6th Cavalry

FOLLOWING a long established custom, the regiment assembled at the flag pole at 10:45 A. M. May 4th to appropriately celebrate the anniversary of the birth of the 6th Cavalry. The ceremony was open with a prayer by the chaplain following which the regimental commander, Colonel T. A. Roberts, addressed the assembled regiment. He spoke of the accomplishments of the regiment in the past and the excellent record it has always maintained. He then addressed the twelve oldest men from point of service in the regiment who were assembled in rear of the standards. It was largely through the efforts of these men, he said, that the regiment has been able to reach and maintain its high standard. All of the men who joined the regiment during

the past year were assembled in front of the standard and formally presented. The colonel pointed out to these men that the old soldier was one whose standards could well be copied by the younger men of the regiment. Captain H. A. Myers, the regimental adjutant, then gave a short history of the regiment.

At noon all the troops celebrated with a special dinner, to which all non-commissioned officers in the post were invited. In the afternoon the annual baseball game between the oldtimers and the officers was played with the former winning by the score of 5 to 3. The celebration ended with a tea dance for the officers and in the evening the annual Military Ball for the enlisted men was held in the gymnasium.

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### Annual Tactical Inspection, Fort Oglethorpe

THE annual tactical inspection of the troops at Fort Oglethorpe was conducted by Major General R. P. Davis, Commanding General Fourth Corps Area, on May 1st, 2d, and 3d. General Davis and his staff arrived at the post the morning of the 1st, and following the salute, were escorted by Troop A, Sixth Cavalry, to McDonald Field where the 6th Cavalry, 3d Battalion 22d Infantry and Detachment Medical Corps were formed for review in his honor. Following the review, Troop F received a warning order to prepare to entrain for a temporary change of station. The remainder of the regiment returned to the post and during stables was inspected by the Corps Area Commander or his staff. In the afternoon the entire regiment was assembled for massed calisthenics following which each troop executed the movements of basic drill, dismounted.

On the morning of the 2d, officers' call was sounded and a warning order issued to the assembled officers for the regiment (less Troop F), to take the field immediately and march to Catoosa Target Range. Troop F, in the meantime, had received orders to commence the actual entraining and loading at 7:00 A. M. The loading was completed in one and one-half hours, which was well within the prescribed limit. The troop was then ordered to detrain and join the regiment at Catoosa. Upon arrival at the range, a complete camp was erected and later inspected by the Corps Area Commander. The infantry had also left the post and camped for the night in Chickamauga Park.

In the evening situations were issued to both the cavalry and the infantry for a problem the next morning. By noon of the 3d all troops were back in the post and the officers assembled at Post Headquarters for a short critique. General Davis spoke highly of the regiment and the troops at the post and expressed great satisfaction in the efficient manner in which all concerned had performed the tasks assigned and in closing stated "I consider the 6th Cavalry a crack regiment."

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### News from Fort Ringgold

THE 12th Cavalry was gathered together at Fort Ringgold in April for the annual tactical inspection. Social activity took on great acceleration during this time, but only one horse trade was accomplished.



The inspection was very satisfactory. In the tactical phase the enemy made the mistake of dispersing his force and was defeated in detail.

Polo suffered a setback when a rise in Olmos Creek caused a small flood which inundated the field, washing away fences and side boards. Temporary construction has been erected to keep out cattle while the fence is being put in. A new polo stable has just been built and a bunch of green ponies were ready to go into slow polo when this disaster occurred.

The new polo stock is half bred or better, raised in Texas almost exclusively. Most of the prospects are private mounts but there are a few re-mounts from last year's arrivals that show lots of class.

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### 12th Cavalry Annual Inspection

ON April 3rd, the Fort Brown garrison marched to Fort Ringgold, Texas, for ten days' combined maneuvers with the remainder of the regiment. The commander, Lieutenant Colonel Eby, 12th Cavalry, commanding in the absence of Colonel William T. Johnston, who is on sick leave, conducted several problems with the regiment prior to the tactical inspection. This was the first opportunity for combined training of the regiment since the reorganization, and proved highly instructive.

The Corps Area Commander, Major General T. Q. Donaldson, conducted the Annual Tactical Inspection of all units on April 13th and 14th. The night of April 13th-14th and the morning of April 14th were devoted to a field problem, the Corps Area Commander conducting his critique of the problem on the afternoon of that date. His remarks as to the state of training of the regiment and its readiness for field service were very gratifying to the command.

On the afternoon of the 14th, the Corps Area Commander, accompanied by the Regimental Staff, motored to Fort Brown for inspection of the Post.

On April 16th, the Machine Gun Troop left for Fort Brown, while Headquarters Troop and Toops A and B remained at Fort Ringgold for a few days to fire the qualified men in record practice. On April 19th, the remainder of the 12th Cavalry (less 2d Squadron) returned by marching and arrived at Fort Brown, April 22d.

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### 12th Cavalry Polo

THE Fort Brown polo team participated in the Houston Spring Polo Tournament from April 22nd to May 6th. While the team did not win any cups, it gave a creditable account of itself considering the strong opposition encountered.

There were nine teams entered in the tournament among which were Army teams from Fort Sam Houston, Texas, Fort Reno, Fort Brown and Kelly Field. The civilian teams were from Dallas, Wichita Falls and three teams from the Houston Riding and Polo Club, which sponsored the tourna-

ment. Superior stick work and team work on the part of the Fort Sam Houston team decided the tournament in their favor.

During the Polo Tournament, a horseshow was held, in which Captain Franklin and Lieutenant Garver each won a first place in jumping and received handsome cups, as well as placing in several other events.

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### Presentation of the Goodrich Trophy

ON May 3, 1928, the 2d and 13th Cavalry and Battery D, 18th Field Artillery, assisted at the presentation of the Goodrich Trophy to Machine Gun Troop, 2d Cavalry (formerly Troop G). The ceremony was held on the western slopes of Morris Hill. It opened with not a man in sight, except the



**The Goodrich Trophy**

combined bands in rear of the reviewing officer, the Commandant. At a signal, the troops appeared from concealed positions west of the Redoubt, and, advancing at the trot, formed a square. At a second signal, Troop G, 2d Cavalry, advanced into the center of the square and received the trophy. The troops then passed in review at the trot and gallop, continuing the latter gait beyond the reviewing ground to a position behind the Redoubt from which they emerged a moment later in three waves, charging straight at the reviewing stand, while the battery fired several volleys of blanks across their front. The charge was checked just short of the Reviewing Officer and the regiments trotted off in column of platoons. The ground in the vicinity of Morris Hill affords spectators a beautiful view and permits a greater variety to ceremonies than can be had on the flats. A similar ceremony was held for Brigadier General Frank Parker upon the occasion of his visit on May 19th.

### **Cavalry Band Organized for Mass Concerts**

THE War Department has been informed of the organization, for concert purposes, of an eighty-piece band at The Cavalry School, Fort Riley, Kansas, under the direction of Warrant Officer Sidwell, 13th Cavalry. The bands of the 2nd, 9th and 13th Cavalry are combined there on certain occasions for mass concerts. The first appearance of this huge musical organization was at Fort Riley, Kansas, on May 11th. Each of these mounted bands is well known throughout Kansas, Oklahoma and Missouri, having played concerts in an average of twenty-five cities and towns during the past year.

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### **Cavalry School Horseshows**

A SERIES of nine horseshows has been held during the winter, sponsored by the Academic Division, the 2d, 9th, and 13th Cavalry, and Battery D, 18th Field Artillery. All were indoors except the last on May 23rd, Organization Day of the 2d Cavalry. The holding of frequent shows has kept up interest among all officers and men of the post who have kept horses in training. All shows include open jumping classes and ladies' classes. The regimental shows included classes for enlisted men as well. Classes for polo ponies, chargers and hacks, and gymkhana events were interspersed throughout the season. The result has been the development of the best horseshow competition that the Cavalry School has had in years.

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### **The Cavalryman's Cup**

WHAT are the requisites of a good cavalry officer? Briefly, he must be able to handle weapons efficiently, to care for horses and to ride, to determine quickly and accurately the best solution of any likely tactical situation, to teach all under his command their duties, and, finally, and most important, he must be able to lead his troops in battle. The purpose of The Cavalry School, Fort Riley, Kansas, is to train officers to be good cavalrymen. Most of their remaining service is spent in practicing and perfecting those things taught at the school.

While no one test has ever been devised to determine the proficiency of an officer in all the essentials of a cavalryman, nevertheless, each year at graduation time at The Cavalry School, various tests of ability in some one particular line are held. Heretofore the various cups and prizes awarded during graduation exercises have been given solely for excellence in equestrian events.

This year for the first time there is offered a new trophy, called "The Cavalryman's Cup" to be awarded for "general all around excellence and proficiency embracing all phases of the duties a cavalry officer may be called upon to perform in the field." The tests for this cup are scheduled as part of the graduation events held at Fort Riley during the first ten days in June.

Included in this competition is a phase contemplated to show the contestant's skill with his pistol, mounted and dismounted. Each entrant is also required to demonstrate his skill with sabre and rifle. He is also judged on the performance of his remount in the Annual Remount Competition. Since the training of his mount covers a period of nine months, this phase alone is a demonstration of almost a year's work, and includes a rating of the remount's gaits, conformation, stamina, condition, jumping ability, schooling and ease of handling over sabre and pistol courses. The contestant's place of finish in the now famous fifty-mile "Night Ride" will also be counted in his total score for The Cavalryman's Cup. This ride, which is acknowledged to be one of the severest equestrian tests held throughout the entire service, constitutes a measure of the entrant's ability to negotiate at speed a long distance over an unknown course at night. The winner usually covers the course in about six hours or less. Finally the inclusion of the student officer's grades in the General Terrain Exercises, held annually as the culmination of the year's instruction in cavalry tactics, inject into the competition an element of academic rating.

The system of rating the contestants is indicated below:

Pistol qualifications (mounted and dismounted).....	100
Rifle qualification .....	100
Sabre qualification .....	100
Remount competition .....	250
Night Ride .....	200
General Terrain Exercises .....	250
<hr/>	
Total .....	1000

The winner of The Cavalryman's Cup, which is a handsome old-English trophy, can well take pride in its possession, for it marks the highest all-around proficiency in the subjects taught at The Cavalry School, the subjects in which a cavalry leader must excel.



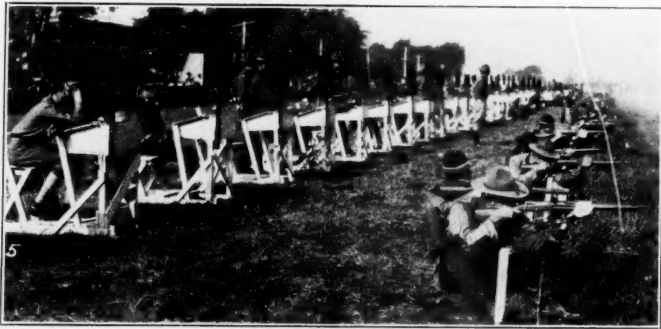
### Students Take the Field

ONE hundred and twenty-five officers of the Cavalry School, Fort Riley, Kan., including the entire student body and instructional staff, spent a week in the field under conditions approximating actual warfare. Regular officers, National Guardsmen and Reserve officers, in command of Lieutenant Colonel Copley Enos, established a camp six miles south of Junction City where various tactical problems were worked out. Later in the week the camp was moved to the Maloney Ranch near Skiddy, where wide areas of grazing land cut by numerous ravines makes an ideal maneuver ground for cavalry troops. Various problems of command, staff and supply occupied the attention of the student officers during this field training.

### The Cavalry Rifle and Pistol Team, 1928

THE Cavalry Team Tryouts, this year, are being held at Ft. Riley, Kansas, on the old National Range. Quite a bit of work has been done on improvements on the range, and it is believed very satisfactory results will be obtained in training at this station. Captain A. H. Norton, 8th Cavalry, who was captain of the 1927 Cavalry Team, has again been selected to head this year's team.

A squad of about forty candidates has been ordered to Fort Riley. About fifteen are officers. The squad is nicely balanced in regard to experienced and inexperienced competitors. It is very fortunate, in many respects, that the tryouts are held at Ft. Riley. The trials here open up a wealth of new material in young officers just graduating from the school—these candidates might otherwise be completely overlooked. Also the cavalry regiments, at this post,



The Firing Line at Camp Perry

make it possible to order up additional enlisted candidates, due to saving in transportation.

The Cavalry Matches will be fired here about the middle of June. These matches are:

Regimental Team Championship, won in 1927 by the 5th Cavalry (Sgts. Reed and Such).

Offhand Championship, won in 1927 by Sgt. Jensen, 7th Cavalry.

Ft. Bliss Trophy (1000 yard match), won in 1927 by Sgt. Christensen, 2nd Cavalry.

Individual Championship, won in 1927 by Sgt. Christensen, 2nd Cavalry.

Pistol Championship, won in 1927 by 1st Sgt. Harris, 1st Cavalry.

There has been added for 1928 a Rapid Fire Championship Match.

Suitable medals and trophies are awarded winners of each match.

The candidates for the team are:

1st Cavalry: Sgt. Harris, Sgt. Owens.

2nd Cavalry: 1st Lt. Phillips, Pvt. Christensen, Sgt. Reynolds, Sgt. Crismon, Sgt. Cross, Sgt. Swift, Sgt. Benkowsky.

3rd Cavalry: Sgt. Blazejevski, Sgt. Wells.

4th Cavalry: 2nd Lt. Bridgman, 2nd Lt. Merrick, Sgt. Messier.  
 5th Cavalry: Sgt. Such, 1st Sgt. Lawrence.  
 6th Cavalry: Sgt. Corum, Sgt. Edwards.  
 7th Cavalry: Sgt. Jensen, Sgt. Elliott.  
 8th Cavalry: Sgt. Wilzewski, Sgt. Yeszerski, Sgt. McDaris, Corp. Saneski.  
 10th Cavalry: 2nd Lt. Claussen, 1st Sgt. Sharp, Sgt. Blunt.  
 11th Cavalry: 2nd Lt. Riepe, 1st Sgt. Nowell, Sgt. Barrett.  
 12th Cavalry: 2nd Lt. Greenhalgh, 1st Sgt. Kirby, Sgt. Adams.  
 13th Cavalry: 2nd Lt. Carleton, Sgt. Gates, Sgt. Rubino, Sgt. Jacobs.  
 14th Cavalry: Sgt. Schonieczny, Sgt. Krumpholtz.  
 Cavalry School: 1st Lt. Burcham, 1st Lt. Stillinger, 1st Lt. Thorpe, 1st Lt. Swift.  
 Other Sources: Capt. Heavey, 1st Lt. C. J. Harrold, 2nd Lt. F. J. Thompson.

### Fort Myer Society Circus

THE Annual Society Circus was held in the post riding hall, Fort Myer, Virginia, the afternoon and evening of March 24th.

The entrance was covered by a large canvas, the hall gaily decorated with flags, bunting and carnival colors putting the spectators in a favorable atmosphere to appreciate the performance.



The circus started with a grand parade led by the ring master in a 2HP. glass carriage model '98. Following were the tandems in white trappings, the hunt in pink coats, real Indians and cowboys, demure bareback riders, the



quadrille band, animal wagons with animals inside, stage coach, tallyhos and clowns.

After the parade the spectators were rapidly carried to the far West as



exemplified by the cowboys, Indians and stage coach; to merry England by the hunt, hounds, tallyhos and pink coats; to Madison Square Garden by the quadrille and tandems; to Valley Forge by the Artillery in Continental uniforms and finally back to Fort Myer by the monkey drill and rough ride.



A number of Washington debutantes assisted the troops of the command by taking part in the hunt, quadrille and tandems, giving their afternoons during March for rehearsals.

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### 307th Cavalry Races

LIEUTENANT Colonel Earnest, commanding the 307th Cavalry, has with other horsemen been instrumental in inaugurating cross country racing around Richmond. On May 12th four fine races were put on at Curl's Neck Farm, at which some five thousand spectators were present. The result of these races so far as our Cavalry is concerned is very favorable. The number these races so far as our Cavalry is concerned is very favorable. The number the knowledge of conditioning acquired in preparing for such contests is becoming more general.

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### Fort Ethan Allen Horseshow Team

THE Horseshow Team from Fort Ethan Allen, Composed of Captain Booth, Lieutenant Duffy, Sergeant Nickerson and Corporal Wood, took part on May 3, 4 and 5 in the Hartford Horseshow, which was held in the Troop B Armory at West Hartford, Conn. Many handsome animals were entered in this show, which is one of Hartford's big annual society events.

The army team had only regular army horses with which to work and yet, though handicapped, made a sensational record.

In the novice class, with jumps at three feet nine inches, Sergeant Nickerson won first place, and Lieutenant Duffy third place. In the lightweight open jumping, Sergeant Nickerson won second place, and Lieutenant Duffy fourth place. In the enlisted men's jumping, Sergeant Nickerson won first place, and Corporal Wood second place. In the troopers' mounted class, Sergeant Nickerson won third place. In the middle-heavyweight open jumping, Lieutenant Duffy won third place, and Sergeant Nickerson fourth. In the four-foot-six Touch and Out jumping, Corporal Wood won first place.

### Notes from Fort Des Moines

THE annual spring horseshow was held in the riding hall on March 30. The affair was attended by the Governor of Iowa and his staff.

The Regimental Commander, conducted a course in equitation for all officers of the garrison from November 1st to March 31st. The progress made during this instruction was quite noticeable. Special instruction was given in schooling.

The present polo squad consisting of Captain G. H. Doshier, 18th Field Artillery, Lieutenants J. H. Walker, C. H. Martin and G. W. Busbey has been greatly strengthened by the addition of the following officers who have been recently assigned to the regiment—Major J. D. Kelley, Captains M. S. Williamson, P. S. Haydon and B. M. Creel. Some new ponies have been received from the Remount station at Fort Robinson, Nebraska, and are being worked out daily in the riding hall under the supervision of the team Captain, Lieutenant J. H. Walker.

Upon the reorganization of the Cavalry on February 1st, 1928, a shipment consisting of eighty-eight horses was received from Fort Riley, Kansas.

Spring Training was started on April 1st. The regiment, under the supervision of Lt. Col. A. G. Hixson, 14th Cavalry, is making rapid progress with this work.



### Athletics at Fort Meade

THE arrival of the regimental Headquarters and second quadron of the 4th Cavalry at Fort Meade during the past summer, uniting the regiment after years of separation, has given an added impetus to regimental activities of all kinds and has had an especially beneficial effect upon athletics. The opportunity offered officers and enlisted men at Fort Meade to participate in their favorite sport has helped immeasurably in building up morale and overcoming the disadvantages arising from the isolated location of the post.

An inter-troop baseball league is now in full swing, all organizations having teams between which double-header games are played each Wednesday afternoon. In addition, a regimental team has been entered in the Black Hills League, in competition with five other teams from the larger cities of the Hills. The schedule of league games includes ten outside games and ten home games played on the Fort Meade Diamond.

Boxing has been developed into the most popular year-round sport at this station. Boxing cards are held on the last Monday of each month and have proved remarkable drawing cards for both soldiers and civilians. In most cases the civilian attendance has far exceeded the post attendance, coming from all parts of the Black Hills. In all of the main events the policy has been to match civilians against soldiers, while the preliminaries have been for the most part between soldiers. The Post Hospital and several of the troops have their own rings for the training of men of their own organization. The monthly boxing events during the summer will be held in a recently com-

structed open-air boxing arena, with a capacity of approximately three thousand. It is expected that the increased accommodations will result in even larger audiences.

During the past winter a swimming pool was constructed on the reservation by damming up a small stream just south of the post proper. This has now filled nicely and is available for swimming in summer and skating and other sports in the winter. During the past spring, the pool was stocked with some two thousand trout by the State of South Dakota.

With Majort R. I. Sasse as polo manager, three polo teams have been organized from the officers of the 4th Cavalry. Forty ponies have been placed in the polo stables as the string for the 1928 season, and a new field has been constructed in the immediate vicinity of the post.

In an effort to develop new polo mounts from green material, each playing officer has been training from one to three remounts. Several of the ponies thus developed have already been played in fast polo.

A tentative schedule has been arranged with teams from Pierre and Hot Springs, and a tournament for the championship of South Dakota will be played at Fort Meade on July 27th and 28th. In addition, a regimental team will be sent to the tournament at Colorado Springs, Colo., in August.

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### Inactive Training Period, 305th Cavalry

REGIMENTAL day, April 17th, brought to a close the most successful Inactive Training period in the history of the regiment. The training commenced on October 1, 1927. The attendance at all activities was larger than ever before, in fact, the equitation class became so large that it was necessary to divide it into two sections, the advanced and basic.

Equitation classes were held twice a week for two-hour periods on Wednesdays and Sundays. During these periods instruction was given in the following subjects: Equitation, jumping, cavalry drill, saber work mounted, pistol mounted, care of animals and stable management.

In addition to the drill periods tactical training was carried on at the monthly conferences, map problems, map maneuvers and war games.

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### Regimental Day, 305th Cavalry

ON April 17th the regiment, in compliance with Army Regulations, held its fifth Regimental Day Celebration in Philadelphia, which was the most successful ever held. The program was carried out in true cavalry style as follows:

Exhibition ride at 6:00 P. M., 103rd Cavalry Armory. Only twenty-four members of the equitation class could ride due to a shortage of equipment and horses. The members riding made an excellent appearance. The well groomed horses furnished by Captain Campbell, Q. M. C. School, equipped with the white bridles, saddle cloths, tie ropes, and bandages, loaned the regiment by Ft. Riley and Ft. Myer, showed to advantage. The appearance of the riders

in their new uniforms was very favorably commented upon by the distinguished guests present. The ride given in honor of General H. B. Crosby, Chief of Cavalry, was a silent one and was carried through in most excellent style. It consisted of over thirty movements and jumping exercises without reins or stirrups.

The reviewing stand was decorated with the regimental standards and cavalry colors.

Following the program at the Armory, the regimental dinner was held at the Racquet Club, at which Colonel William Innes Forbes, Commanding



**305th Cavalry Equitation Class**

the 305th Cavalry, presided. A miniature cavalry camp in the field was laid out in regulation form on the table at the dinner.

General H. B. Crosby, the principal speaker of the evening, gave a highly interesting talk on the Cavalry Army and complimented the regiment on its fine esprit.

Colonel William Innes Forbes, commanding the regiment, in compliance with Paragraph 7, Army Regulation 345-105, reviewed the activities and the accomplishments of the officers and men of the regiment during the past year. Colonel Forbes thanked Captain Wood and Captain Campbell, in the name of the whole regiment, for their kindness in allowing the regiment to use their equipment, horses and armory for the drills, conferences, and tactical rides. Without their cooperation inactive training in the regiment would not be possible.

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### 10th Cavalry Polo

THE 10th Cavalry Polo Team returned from Los Angeles, California, the 24th of March after a successful stay of one month at Midwick in tournament play.

The team was composed of Captain R. C. Gibbs, team captain and No. 3, Captain C. M. Hurt, No. 1, Lieut. B. G. Thayer, No. 2, Lieut. H. G. Maddox, back, Lieut. R. W. Curtis, substitute.

Lieut. Colonel Lewis Brown, Jr., Polo Representative at Fort Huachuca, was in charge of the training of the team which was picked from some twenty-eight players.



**Stonewall Jackson: The Good Soldier.** By ALLEN TATE. 322 pp. Illustrations and Maps. Minton, Balch and Company, New York. \$3.50.

Stonewall Jackson stands forth in this new biography as a figure romantic and compelling, not only to Southerners but to all Americans. His eccentricities, religious tendencies, high-mindedness, and extraordinary military abilities are clearly portrayed in this fascinating narrative.

In the early chapters of the book we learn of General Jackson's parentage, and of his boyhood days at Jackson's Mills, Virginia. Following this, his cadetship at West Point and service during the Mexican War, resignation from the army, professorship at the Virginia Military Institute, and entrance into the Confederate Army are taken up chronologically. The chapters devoted to the history of his campaigns, beginning with the first battle of Manassas and terminating with his great achievement at Chancellorsville, where he received his mortal wound, are most interesting and are easily understood by the non-military reader as well as the military student.

Jackson, born and bred a Virginian, first commanded a brigade of the Army of the Shenandoah, which was comprised entirely of Virginians and came to be known as the famous "Stonewall Brigade." It is interesting to note the characteristics of these Virginians. Jackson at first found it difficult to find officers, the Virginians considering it a greater honor to serve in the ranks. They were hard to discipline, and there was very little saluting of officers, "for they were born free men; they had been brought up to believe in personal liberty. Many came from large plantations; others from small farms; all of them intensely felt their independence."

At first his men thought that he was most peculiar. They could not understand his fanatical secrecy in his maneuvers, his incessant praying and his association with preachers. In the early stages of his campaign in the Shenandoah Valley, his tactics were particularly bewildering to his men, for his method of advance appeared to them as retreat. This soon became known in both North and South as "Stonewall Jackson's way," and he was a hero everywhere, being cheered always by his own men and, on some occasions, by the Federal troops.

There was, perhaps, no other general in the Southern Army whose tactical ideas so closely resembled those of General Lee as did Jackson's. Between these two generals there always existed the deepest sympathy and affection. That Jackson held the confidence of Lee is shown by the fact that the latter always assigned him the most important missions on the field of battle, and Lee, hearing of Jackson's wound, said: "He has lost his left arm, but I have lost my right." In speaking of Jackson's loyalty, Lee said: "Straight as the needle to the pole, he advances to the execution of my purpose."

The book is fully illustrated with maps and reproductions of contemporary portraits, caricatures and photographs, and with decorations by Philip Kappel.

**The Life of Andrew Jackson.** By JOHN SPENCER BASSETT, Ph.D. 766 pp. Illustrated. The Macmillan Company, New York. \$4.50.

*The Life of Andrew Jackson* by John Spencer Bassett is a pure biographic study. After tedious years of labor in research Mr. Bassett has made corrections in earlier works on the life of Jackson, has added further valuable historical facts, and has made this a thoroughly exhaustive and scholarly subject. He chiefly points out that it is his purpose to make of his book a complete biography in which Jackson is in the center of the picture, and the history of the times is placed in the background. His effort has been to give a more clear understanding of Jackson himself, and "to show in the faithful story of his life the exact trace he left on the nation's history."

In his opinion Jackson was of a class of powerful personalities in which are Julius Caesar, Bismark and Wellington. He found admiration and support in the hearts of the average American, wherein lies the simple secret of the Jacksonian movement. Out of the war he became a great political force in direct contrast to Scott and Grant whose glories led them into political life, only to dim in their new achievements. In Jackson's case his political ventures became the crowning point of his notable career. The book contains an excellent account of his presidential campaign, and his untiring fight for the recharter of the Second National Bank.

From a military point of view "few American generals have equalled him in courage, promptness, perseverance, resourcefulness, and the ability to command the confidence of his officers and the obedience of his private soldiers. These were natural qualities, and they are much more than half the making of a great soldier; but they were not all. He lacked—for he had no opportunity to acquire—the trained officer's knowledge of military technique. . . . So far, therefore, as his short career witnesses, the 'Hero of New Orleans' was a man who would blunder against his opponent and then defeat him by sheer fighting."

**Skyward.** By COMMANDER RICHARD E. BYRD. 359 pp. Illustrated. G. P. Putnam's Sons, New York. \$3.50.

Although "Skyward" is in a sense an autobiography, it is more the inspiring tale of adventure that has been made the background for the telling of the story of aviation from the very beginning. Commander Byrd has modestly omitted much that we would like to know of his own life and achievements, as few aviators have had the thrilling experiences he has had. Even from an early youth he was a born adventurer, and at the age of twelve made a trip around the world alone. He has been officially cited twenty times for bravery, and has received the four highest medals our country can give: Congressional Medal of Honor, Congressional Life Saving Medal, Distinguished Service Medal and the Distinguished Flying Cross.

Byrd is known as the scientist in aviation, and all of his daring adventures have been solely in the name of science. His North Pole flight was made with the hope of discovering some unexpected scientific phenomena as well as to encourage public interest in aviation. In his famous flight to Europe in the America he could have carried enough extra fuel to have kept him in the air until daylight had he not taken with him eight hundred pounds of scientific equipment and two extra observers to show that passengers can also be carried. He left in bad weather to prove the reliability of aircraft, as he realized that the future trans-Atlantic plane could not wait for ideal conditions, and that such flights are necessary to all progress. The story of this flight alone is one of the most thrilling in the history of aviation in view of the fact that for nearly twenty-four hours the crew of the America saw neither land nor water.

His chapter on *Spectacular Flights* is particularly interesting as he says "that no matter how hazardous an endeavor may be, it is justifiable when the end sought is human knowledge and augmented progress \* \* \* Spectacular flights accelerate progress, for when the flight is decided upon, then necessity in some cases produces inventions and developments which, in



the ordinary course of events, would tend to be very slow and uncertain. \* \* \* Sensational flights are the italics in the story of aviation's progress."

Then there is the story of his Polar expedition, when for the first time in human history the North Pole was circled by aircraft. He gives an interesting outline of his plans and preparations for his coming flight across the South Pole, which is in the throes of an ice age and where he soon hopes to see "an ice age in full swing." This new adventure is looked upon by those who know as the most daring piece of exploration ever undertaken, and there have been many of his friends who have tried to dissuade him from this project without the least satisfaction. "How great it will be," he writes, "to look down in on tens of thousands of square miles of regions never before gazed upon by humans. I must admit, too, that although the primary object of the expedition is scientific, it will be most gratifying if we succeed in planting the American flag at the South Pole, at the bottom of the world!"

He ends his fascinating book in speculation on the future of flying. In his opinion "flying will be seen to have done more to promote human welfare than any other human agency. \* \* \* Surely it brings mankind closer together, knits the interests of the world, and helps spread knowledge and understanding without which there can be no lasting peace."

**A. E. F. Ten Years Ago in France.** By MAJ. GEN. HUNTER LIGGETT. 335 pp. With maps and illustrations. Dodd, Mead and Company, New York. \$3.00.

This is an excellent and authentic story of the American Expeditionary Forces in France written by the distinguished soldier, Lieutenant General Hunter Liggett, who commanded the 41st Division, the 1st Army Corps, A. E. F., and the 3rd Army Corps, A. E. F. It is a most valuable contribution to the history of the war and gives in outline the American participation—the leaders, the preparations, the battles, and the final return of the troops.

While expressing the greatest respect and highest regard for the British and French commanders, the author is perfectly frank in the criticisms he believes they deserve. Particularly illuminating is the story of the diplomacy and leadership of General Pershing, who is pictured as being constantly confronted with problems designed to place American troops under foreign control.

Throughout the book, one is impressed with the complete and sympathetic understanding General Liggett possesses of the American soldier. He relates most vividly scenes of actual battle, the daring feat of Sergeant York, the plight of the Lost Battalion, which he says was really never "lost," and numberless other incidents of interest.

It is interesting to note from the following quotation the author's feeling of the great need of cavalry when the Third and Fifth Corps drove the enemy across the Meuse: "Had I had two divisions of American cavalry the morning of the second, Von der Marwitz never would have got across the river, and how I prayed for that finely trained cavalry division at San Antonio which transport difficulties had kept in Texas, chafing at the bit. The French cavalry are horsemen only. American regular cavalry is highly mobile infantry as well; it can fight and pursue on horse, but it is as much at home on foot with the rifle as the infantry."

**Great Captains Unveiled.** By CAPTAIN B. H. LIDDELL HART, 274 pp. With maps. Little, Brown and Company. \$3.50.

Captain Liddell Hart, the widely read English military critic, has in this volume analyzed the careers of six great captains. He takes them up chronologically beginning with Jenghiz Khan the founder of the Mongol Empire, then Sabutai who carried the Mongol menace into Central Europe, followed by the careers of Marechal De Saxe, Gustavus Adolphus, Wallenstein, and General Wolfe. The latter he calls "Grandsire of the United States."

The author points out while referring to Jenghiz Khan and Sabutai, the latter

having "conquered thirty-two nations and won sixty-five pitched battles," that "Asia has produced consummate military leaders who in strategical ability may vie with any in history."

Of Marshall Saxe he says: "In its human interests, few careers, and fewer minds are more arresting than that of the natural son of Augustus II of Saxony, for Saxe was a man built on the large scale—in his physique, in his intellect, in his outlook, and in his excesses."

Gustavus Adolphus is pictured as the founder of modern war, so skillfully and effectively did he adopt to the unchanging foundation principles of war the new conditions brought about by the increasing importance of firearms. Gustavus is accredited with providing us with perhaps the earliest example of *fire and movement*, the first to recognize the importance of *mobility*, and the originator of those material elements of warfare—*hitting, guarding and moving*.

Wallenstein, the predominating figure of the Thirty Years' War, a Czech by birth, is described as the "greatest of political-military adventurers, who rose to power only surpassed in modern history by Napoleon." The author interestingly traces the career of this great captain from his boyhood days, through his campaigns over Germany, to his assassination while commander-in-chief of the second of the large armies he organized, equipped and lead to victory. Wallenstein, "the first grand strategist," is looked upon by the author as having been the first to grasp the principle of *unity of command*.

The life and service of General Wolfe are treated in more detail than is the usual custom of the author. The preparations for and the execution of the battle of Quebec are well explained. In the closing pages, the author indulges in some fanciful theorizing as to what might have happened during the American revolutionary period had Wolfe not been killed earlier at Quebec.

The book, although in a sense a military study, is delightfully arranged, and contains only such phrases of strategy, tactics and armaments as are most readily understood by any reader of history.

It should be in every complete military library.

**Reputations: Ten Years After.** By CAPTAIN B. H. LIDDELL HART. 316 pp. Illustrated. Little, Brown & Co., Boston. \$3.00.

*Reputations: Ten Years After* is a succession of short biographies of some of the outstanding commanders of the World War, namely: Joffre, Falkenhayn, Gallieni, Haig, Foch, Ludendorff, Petain, Allenby, Liggett and Pershing. In this day of hurry, when few have the time or the inclination to indulge in the more lengthy reading of the conventional type, this book offers, in condensed form, a tremendous amount of information.

Captain Hart tells us that he has approached his subjects in a purely historical manner, and has endeavored to treat them in the manner of a portrait painter. He has, with a great deal of skill, succeeded in making each stand out as a strikingly vivid portrait.

To make more certain that his history may come most nearly to the truth, he has delayed publishing the book until now. For a considerable period of time he has been gathering information from documentary sources, collecting impressions for his "portraits" from men who were intimate with them during the war, and, out of this general source of knowledge, he has formed the pictures which he has so cleverly placed before us. With each general's career he gives his life's history, his preparations towards fitting himself for his responsibilities, and the outstanding features of his war record.

Although scathing in some of his criticisms, at times showing evidence of personal prejudice, and unrestrained in his judgment and verdicts, the author has produced a work interesting and ingenious, and containing bits of wit. Perhaps he might well

have shown more tolerance with the actions of the men he discusses and, at the same time, have considered more carefully the tremendous problems with which they were confronted.

The age and experience of the leaders has caused no perceptible diffidence in the work of the author. In many instances one may take exception to his charges of incapacity, but notwithstanding this, he impresses one with his ability as a fearless young military critic.

**George Washington: The Human Being and The Hero. 1732-1762.** By RUPERT HUGHES. 580 pp., illustrated. William Morrow and Company. \$5.00.

This is the first of four volumes that Rupert Hughes is writing on George Washington, and takes up the first thirty years of his life, which he speaks of as the important formative period. He considers that too often Washington's biographers have "helped to perpetuate as a devitalized deity one of the most eager, versatile, human men that ever lived," and it has been his object to show that "the truth makes Washington a real and lovable as well as admirable." In this respect Mr. Hughes has highly achieved his purpose. Being a novelist and dramatist, he has made the most of all that goes toward the making of a very readable book, and although he frequently uses a "perhaps" or a "must have," it is nevertheless intensely appealing to the imagination.

Mr. Hughes has tried to make of his work almost an autobiography of Washington, as he has let him "tell his own story as fully as possible in his own words" through the great storehouse of Washington's own writings in his letters and diaries. These are delightfully charming with their misspelled words and incorrect grammar, and give many glimpses into the life of the times and of Washington's contemporaries. He has quite naturally made a very human episode of Washington's love for Sally Fairfax and says that this, "one of the most poignant of romances, finds its proper place in his biography for the first time."

In writing of Washington's part in the French and Indian War, Mr. Hughes has made an earnest effort "to deal fairly with the French, the English, the colonists, with Braddock, Dinwiddie and all others who were at times Washington's warmest supporters, at times his most ardent opponents." This picture of the very patriotic young Colonel Washington who was always resigning his commission is highly dramatic, and brings to view his many disappointments as he had "to grope for his faith and he missed few of the pitfalls, the thorns and torments of the way."

This volume closes with his marriage and apparent retirement to his farm which had been sadly neglected during his many years of campaigning. At this time little did he think of the great rebellion against his King in which he was soon to assume the leading role.

**George Washington: The Rebel and the Patriot, 1762 to 1777.** By RUPERT HUGHES. 694 pp. Illustrations and maps. William Morrow & Company, New York. \$5.00.

This is the second of the four-volume biography of George Washington which is being written by Rupert Hughes. It begins with the year 1762, where the first volume left off, and carries on the story of George Washington from then (his thirtieth year) to after the Battle of Trenton, which is considered by many as having been the turning point of the Revolutionary War.

The author tells us that, as in the first volume, he has endeavored to let Washington tell his own story in his own words, and has tried "to see his world and his times as they must have looked to him, not as they appear to a backward gaze across a landscape filled with tall oaks that were once acorns, and monuments that were once men."

The material for the portion of the book devoted to the Revolutionary War was obtained from a thorough study of documents relating to the campaigns. The author

states that he has "endeavored to cling to Washington's own text as far as possible in the welter of contradictions, and to remain with him in the story of the Revolution."

"There is a tense drama and moving pathos in the story of this period of Washington's life—the drama involved in the changes of his life, the drama of leadership and of war—the pathos shown in many affecting incidents told by Mr. Hughes of a great soul struggling against almost overwhelming odds."

**Life and Letters of Matthew Fontaine Maury.** By JACQUELIN AMBER CASKIE. 191 pp. Illustrated. Richmond Press, Inc., Richmond, Va. \$3.00.

This is a short, simple and excellently done biography of a man who spent a busy and fruitful life in the naval service of his country, and who is apparently little known outside of his native state of Virginia where he is dearly loved and highly honored. Recently when his name was proposed for the "Hall of Fame" a writer on the staff of a New York daily seemed very much surprised and admitted that he "had never even heard of him."

This little book brings to light the many outstanding abilities and achievements that so happily brought him the sobriquet, "The Pathfinder of the Seas." He was the founder of the National Observatory and Signal Service. At his suggestion the United States Naval Academy at Annapolis was founded. His Charts of the Winds and Currents completely changed the commerce of the world, and from this alone, nations saved millions of dollars annually and their kings and emperors honored him with medals and decorations. He is said to be "the most decorated person born on American soil." It was through Commodore Maury's genius, observation and knowledge that the first Atlantic Cable was successfully laid.

At the outbreak of the Civil War, Maury, like many other noted Virginians, gave his services to the South, and by his electric torpedo invention and his harbor defense plans caused much damage to the Federal forces, whose "navy lost more vessels by torpedoes than from all other causes whatever."

"He has been an honor to Virginia, an honor to America, and an honor to civilization, and in gratefully recognizing this we do but honor ourselves."

**Riding and Schooling.** By MAJOR R. S. TIMMIS, D.S.O. 170 pp., 62 illustrations. Vinton and Company, Ltd. \$3.00.

The volume contains forewords by Lieut.-General Sir Charles T. McM. Kavanagh, K.C.B., K.C.M.G., C.V.O., D.S.O., late commanding the British Cavalry Corps in France, and Lieut.-Col. M. F. McTaggart, D.S.O., late 5th Lancers. The author needs no introduction to the American public, his earlier books, *Modern Horse Management*, *Horsemastership*, *Riding and Driving*, and *Lameness in Horses*, having been widely read on this side of the Atlantic, and he having been seen in the leading horse shows of the United States.

The book contains chapters on almost every phase of equitation, and, although prepared in more or less narrative form, is readily adaptable to use as a text book. The underlying theme is the adoption of patience, understanding and love toward the horse and the discontinuance of cruel methods formerly used by some trainers. In the chapter devoted to the Psychology of the Horse this principle is ever stressed. He teaches that patience and caresses bring love and confidence which are so necessary in horse training.

The book contains chapters on the elementary subjects of saddling and bridling as well as the more advanced subjects of jumping, schooling, feeding and horsemastership in general.

The prevention and treatment of saddle galls, the proper use of the legs and hands, methods of teaching young horses to jump and conformation are all discussed in a manner easily understood by the beginner and of interest to all.

Although his methods are not always in accord with those taught at our Cavalry School, the book as a whole should be of great value to one unable to receive such instruction.

There are sixty-two illustrations and drawings, most of them being used to supplement the text.

**Scouting Thrills.** By CAPTAIN G. B. MCKEAN. 235 pp. The MacMillan Co. \$1.00.

The book contains twelve chapters, each in itself a short sketch of some particular event during the World War.

The author, who was a member of the Canadian forces in France, has apparently relied on his diary for the subject matter. He states early in his book that it is a series of stories written to entertain and possibly to thrill, but not to instruct. Most of the stories deal with patrolling in No-Man's-Land, which work was done generally in the Canadian army by units known as Scouts.

Although it is stated in the body of the book that the primary purpose of it is to entertain boys, the book is, nevertheless, interesting to grown-ups as well, and contains many elementary principles of scouting which might well be followed should the same situations arise in the future. However, it is not a text book in any sense. It is a picture of courage, enthusiasm, and skillful execution of work conducted by small patrols in No-Man's-Land.

The author entered the war as a private in the Intelligence Section, serving first as a sniper, later as an observer, and finally as a scout. At the close of the war he held the rank of captain, commanded a unit of scouts, and by his daring and skill had won for himself the most coveted decoration of the British Army—the Victoria Cross.

This would be an interesting volume for any troop, battery or company library.

**The Cavalry Journal** (Great Britain), April, 1928.

**Reviewed by Major John T. McLane, Cavalry**

The personal sketches in the April issue of Major General John Gaspard Le Marchant, by Brevet-Major A. R. Godwin Austin, and of Field Marshal The Earl Haig, by an anonymous author, give interesting sidelights on the lives of two great cavalymen. General Le Marchant was the founder of a system of professional education for officers and established both the Staff College and the Royal Military College. It is pleasing to note that in his scheme for a military college, General Le Marchant planned "a school more or less on the lines of West Point." In addition to being a student, the subject of the sketch was a fearless leader of cavalry, and fell at Salamanca leading his men in a mounted attack. The tribute to Field Marshal Haig is a glowing recital of the outstanding characteristics of this great soldier. A cavalryman, he typified all of the things for which the cavalry spirit is the symbol. His passing was, indeed, a blow, not only to the British Empire and the British Army, but to the world. We remember with satisfaction his faith in the future of cavalry as evidenced by his official report on the World War. No one can read this appreciation of Marshal Haig without the feeling that here was one who possessed in the highest degree all of the qualities for which we of the cavalry should strive.

*Nery, 1914*, gives some interesting history of the action at Nery, France, in which the British 1st Cavalry Brigade and the German 4th Cavalry Division participated. As a result of this fight the German 4th Cavalry Division was unable to act effectively and failed to locate in time the threat that menaced von Kluck's open right on the 5th of September. This affair was apparently a chance encounter in which the elements of mutual surprise were present. The initial advantage lay with the Germans, but through their failure to act quickly the British were able to bring up reinforcements and turn the tide in their favor. As is generally the case in cavalry actions, this was a time for the German cavalry to act, and not spend too much time in estimating the situation.

*Some Thoughts on Modern Reconnaissance*, by Major Hume, presents in outline the first phase of the operations of French and German cavalry in Belgium in August, 1914. The author deduces from these operations that fire-power upset the preconceived ideas and tactics of both sides, thus causing each to accomplish little. Now that we have the tank and armored car as well as attack and bombardment aviation, the reconnaissance role is even more difficult than in 1914. The solution suggested for over-

coming these difficulties is the addition of armored cars and tanks to cavalry organization rather than the creation of a mechanized force. This is a very interesting article on a subject which is receiving a great deal of attention in our own service.

Those who have ridden a frisky remount in the snow at Fort Riley will find much that is reminiscent in *Notes on Riding in Sweden*. The article on *The Ancestors of the Tanks*, by Colonel Fuller, shows that the idea of protected mobility is not new, as war carts were used as far back as the twelfth century B. C. *Du Groupe de Reconnaissance* describes the organization and employment of French corps and divisional cavalry.

#### **Memorial de Caballeria** (Spain), November, 1927.

##### **Reviewed by 1st Lieut. C. C. Clendenen, Cavalry**

The issue of the *Memorial de Caballeria* for November contains a continuation of the report of the French Commission which visited the Near East in 1925 to purchase Arab stallions for the French remount service.

This issue contains an interesting article entitled *A Lesson of the First Civil War*, by an anonymous author. The article discusses the operations of the guerilla forces during the Carlist War of 1833-40, and particularly the operations of the bands under the famous guerilla leader, Cabrera. The author believes that "if Spain had had a leader of the caliber of Cabrera when fighting against the French, Napoleon would have found Spain a hard nut to crack."

*The Horse Should Disappear from the Strategic and Tactical Field* is the title of an article which recently appeared in a Madrid paper. Writing under the same title, in this issue, of the *Memorial de Caballeria*, Commandant Carlos Jaquotot, a cavalry officer, criticizes the article, and reaches far different conclusions. Commandant Jaquotot quotes copiously from the article, the author of which believes that the development of mechanized forces has rendered the horse entirely obsolete. After examining the arguments on which the conclusion is based, Commandant Jaquotot concludes that motorized concentrations can be effected only behind a protecting screen of horsemen—that the horse is still indispensable.

This issue of the *Memorial de Caballeria* also includes a short reprint from the *Bulletin of the Royal Spanish Academy*, discussing the differences between the equine terminology of Spain and Spanish America. These differences, it may be noted, are much more marked, apparently, than similar differences between England and the United States.

Commandant Abeilhe, of the Staff, in the first installment of an article on *Voluntary and Militia Service*, suggests the formation of a national volunteer militia, to be superimposed upon the regular organizations, in time of war. Thus, for example, each infantry regiment would include two permanent battalions, and a militia battalion, which would train with the regulars, each cavalry regiment would include two militia squadrons which would train with the regular squadron and each artillery regiment would include one militia "group."

#### **Memorial de Caballeria** (Spain) for December, 1927.

##### **Reviewed by 1st Lieutenant C. C. Clendenen, Cavalry**

*Memorial de Caballeria* for December, 1927, contains several articles which are of considerable interest to American officers.

An anonymous author who signs himself "A," writes upon *The Educational Work of the Chief*. He points out that the commander who finds fault with every act of his subordinates and the commander who is too easily pleased are equally bad,—that the subordinates of neither are being properly trained for battle. "A" emphasizes a point with which we are all familiar, but which is, nevertheless, too frequently overlooked, that "on the day of battle it is not rifles, sabers, cannon nor airplanes which the leader will command; it has always been and will always be *men*; in the past armed and equipped in one manner, tomorrow in another, but always *men*." The author continues by bringing out that many of the disasters of the past have been caused by lack of mutual understanding and sympathy between chiefs



and their subordinates. He believes that the chief's *principal* peace time duty is the professional education of his officers so that such understanding and sympathy will be developed to the utmost. "Preparation for war is much more than drills, firing, maneuvers, schools, conferences and themes. Even in places far removed from the military atmosphere there are frequently encountered occasions for completing the officer's education and for moving his spirit and intelligence.

The December issue includes the first half of a lecture entitled, *Cavalry Exploited the Success at the End of the Great War*. The lecture was given to the officers of the Regiment of *Dragones de Montesa*, by Captain D. Antonio Aymat Mareca, who is a graduate of the *Escuela Superior de Guerre*. Captain Mareca cites several instances from military history of both successful and unsuccessful pursuits. He mentions the raid of the Cavalry Division Cornulier Lucinieres during the Battle of the Marne, and analyzes failure of the French cavalry to pursue the German retreat. The greater part of the first part of the lecture, however, is taken up with a discussion of the transition from open to position warfare. Although Captain Mareca brings forward no new material, he marshalls his facts in an order and with a significance which should be pleasing to every cavalryman.

The November and December issues contain a short article by M. Louis Mercier, Inspector General of Native Affairs in French Morocco, in which he traces the development of Arab equitation, from materials drawn from Arab sources.

The second and concluding installment of Commandante Abheilhe's article on *Preliminary and Voluntary Service* urges the establishment of a Royal Guard, modelled after a similar establishment in Italy. This guard would be a corps d'elite, which would attract picked men. In time of peace it would be at the disposal of the civil authorities, for the preservation of internal order, but in time of war it would become an integral part of the army.

#### **The Remount, March, 1928.**

##### **Reviewed by Major John T. McLane, Cavalry**

In *Saratoga—and Some Observations on Training*, the author, Lieutenant Colonel Gordon Johnston, describes the attractiveness of Saratoga and the interesting types of people one meets there. By far the most interesting people are the trainers. No two are alike and no two follow the same methods in preparing a horse for a race. The article concludes with a compilation of the methods which seem to underlie the methods of most good trainers.

The subject of horse-breeding is of interest to every cavalryman. It is ably treated in *Some Elementary Principles of Horse Breeding*, by Major C. L. Scott. The commonest errors are cited and the principles which must not be violated are stated in a very practical way. Proper feeding of mare and colt is stressed and various rations recommended.

*Horse Power Economy in Town and on the Farm*, by Mr. Wayne Dinsmore, gives some interesting facts on the usefulness of the horse as compared with the motor vehicle. There is little danger of the horse being supplanted by motors on farms and in certain industries in cities. Other articles include: *Team Work in Polo—A New Trend in the American Game*, by Mr. Peter Vischer, which discusses the development of team play in American polo; *"Dude" Ranches*, by Mr. James T. Gratiot, a description of what a "dude" ranch is and how Easterners become for the nonce real Westerners; *Courage*, by Mr. Thornton Chard, an account of how cow ponies faced wild animals during an African hunt; and *Balance*, by Major Wilfrid M. Blunt, a discussion of balance from the military point of view.

## MORE NEW BOOKS

In addition to the books reviewed elsewhere in this issue of the *CAVALRY JOURNAL*, the following have been read in our Book Reviews Department, and are recommended to our readers. Lack of space precludes the usual more lengthy review. Special attention is invited to the prices.

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**Some Memories of A Soldier.** By MAJOR GENERAL HUGH LENOX SCOTT. 635 pp. Illustrated. The Century Company, New York. .... \$5.00  
The life story of one of America's greatest living military men.

**The A. E. F. in Battle.** By DALE VAN AVERY. 373 pp. Maps. D. Appleton & Company, New York. .... \$3.00

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